E83-10267
NASA-CR-170533

SEPT 1982

THEMATIC MAPPER

(E83-10267) THEMATIC MAPPER FLIGHT MODEL PRESHIPMENT REVIEW DATA PACKAGE. VOLUME 4: APPENDIX. PART C: POWER SUPPLY DATA (Santa Barbara Research Center) 365 p HC A16/MF A01 CSCL 14B G3/43

N83-26136

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Prepared for
GODDARD SPACE FLIGHT CENTER
Greenbelt, Maryland 20771
CONTRACT NAS 5-24200

FLIGHT MODEL
PRESHIPMENT REVIEW
DATA PACKAGE
VOLUME IV - APPENDIX
PART C - POWER SUPPLY DATA

Article IV - 3A

HUGHES
HUGHES AIRCRAFT COMPANY
SPACE AND COMMUNICATIONS GROUP

HS 236-0019-1679

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HUGHES AIRCRAFT COMPANY
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Appendix C - Part I

Power Supply Performance Data
Acceptance Data Summary

SANTA BARBARA RESEARCH CENTER
A Subsidiary of Hughes Aircraft Company

INTERNAL MEMORANDUM

TO: J. L. Engel CC: Distribution DATE: 9 February 1982

REF: HS236-7833

SUBJECT: Thematic Mapper Flight Model
Power Supply Acceptance Test Data

FROM: W. H. Freudenstei

BLDG. B12 MAIL STA. 58

EXT. 6290 82-003

Summary

The acceptance test data package for the flight model power supply was reviewed and the data compared to the relevant specification. The power supply was found to be within specification. The flight model power supply is suitable for integration into the flight Thematic Mapper system.

Output Voltage Regulation

The power supply output voltages for the primary and redundant supplies are tabulated in the appended data. The data ranges from a low temperature of 30°F to a high temperature of 131°F. The input voltage range is from 23V to 35V; 28V data is also included. Power supply regulation in general is good.

The appended data shows certain voltages outlined. These represent telemetry levels which exceed the allowable maximum voltage level, 5.1 volts. These exceedences occur only when the power supply output windings are open circuited. This does not create a problem for operation of the system and is the same as was encountered on the engineering and protoflight systems.

The telemetry output for the outgas system also appears out of range (too high). This occurs because the outgas winding of the power supply is not loaded, except in the outgas mode. The outgas voltage and its telemetry output will be within specification when the outgas winding is loaded.

Output Voltage Ripple

Output voltage ripple was examined and found to be within specification.

Efficiency

The power supply efficiencies are tabulated in the appended data pages. This data indicates that the power supply exceeds its minimum requirement for efficiency, 70%, under all operating conditions.

Overvoltage Protection

The power supply is designed to "turn-off" in the event of overvoltage. The input bus may not exceed 38 ±2 volts. An examination of the appended data indicates that the power supply meets this requirement.

Undervoltage Protection

Drive to the power supply maxiswitcher and miniswitcher are removed when the input bus voltage drops below 19 ±1 volt. The power supply meets the requirement as indicated by the appended summary of test data.

Telemetry

The output voltage telemetry for open circuit and picture mode voltages are presented in the appended data. The SMA +7 volt, Radiometer logic, CDVU logic and outgas heater telemetry voltages exceed the 5.1V saturation voltage in the open circuit configuration. This same condition existed for the protoflight and engineering model supplies. This condition poses no problems for normal operation; during troubleshooting a certain amount of information would be lost.

Impedances

The requirements for minimum impedance levels between returns were met in all cases.

Turn-On Requirements

The power supply turn-on requirements were met in the following manner. The system was turned on into internal standby, approximately 42 watts, at a bus voltage of 23 volts and a temperature of -25°C. The system was allowed to warm up to 0°C at which time it was turned off and then back on into a full picture mode load. The flight model power supply (both primary and redundant sides) meets the requirement for turn-on.

Input Current Limit

The input current protection circuit was adjusted and measured as a part of the flight model power supply acceptance testing. The set point is a function of input voltage and is tabulated in the appended data for both the primary and redundant supplies.

Turn-On/Off Transients

The requirements for rate of change of current imposed on the input bus is a result of turn-on and turn-off of the power supply and was verified to be within the requirements imposed by the design specification.

Conclusions

The power supply, both primary and redundant sides meets the requirements imposed upon it by the relevant specifications. It should be noted that the design specification needs to be updated to include a change, agreed upon in 1981 and incorporated into the test specification, to change the SMA ±29 volt range to 29.5 ±1.5 vol

The flight model power supply is from a performance viewpoint, ready for system integration.

W. H. Freudenstein

WHF:are
atc.

Distribution

Altman, L.
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Oxley, S. G.

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~~Summary of Acceptance Test Data Log Form~~ Flight Model Power Supply Outputs

23.0 Volt Bus, +32°F Temperature

G.B. 2/5/8

Output	Power Supply 1				Power Supply 2			
	Open Circuit Voltage (Volts)	TLMY Output (Volts)	Picture Mode Voltage (Volts)	TLMY Output (Volts)	Open Circuit Voltage (Volts)	TLMY Output (Volts)	Picture Mode Voltage (Volts)	TLMY Output (Volts)
Band 1+	23.53	4.287	20.15	3.687	23.70	4.326	20.43	3.74
Band 1-	23.62	4.288	20.16	3.675	23.44	4.257	20.46	3.72
Band 2+	23.78	4.321	19.98	3.646	23.25	4.232	20.28	3.70
Band 2-	23.79	4.303	20.02	3.635	23.48	4.248	20.31	3.68
Band 3+	24.12	4.379	20.07	3.660	23.50	4.272	20.24	3.69
Band 3-	23.38	4.256	20.03	3.660	23.27	4.236	20.31	3.71
Band 4+	23.72	4.299	20.12	3.661	23.62	4.285	20.44	3.72
Band 4-	23.56	4.277	20.14	3.672	23.51	4.268	20.46	3.72
Band 5/7+	22.97	4.188	19.86	3.642	23.08	4.214	20.00	3.66
Band 5/7-	22.93	4.167	19.86	3.626	23.00	4.182	20.02	3.65
Band 6+	22.84	4.129	20.03	3.634	22.98	4.160	20.34	3.69
Band 6-	23.09	4.206	20.04	3.664	23.11	4.210	20.36	3.72
SMA Htr +	24.46	4.451	21.87	4.002	25.07	4.569	22.22	4.07
SMA Htr -	24.40	4.448	22.32	4.052	24.96	4.507	22.69	4.11
SMA +7	9.219	5.688	7.558	4.814	9.145	5.634	7.71	4.92
SMA +29	31.14	4.247	29.97	4.115	31.47	4.318	30.40	4.19
SMA -29	31.36	3.958	29.96	3.898	31.32	3.967	30.42	3.95
MUX	—	—	29.70	4.224	—	—	30.10	4.26
RAD. Logic	9.459	5.122	8.303	4.558	9.685	5.248	8.39	4.60
COMM	9.159	5.073	7.519	4.222	9.225	5.107	7.66	4.29
Analog +	25.08	4.446	22.06	3.946	25.72	4.563	22.39	3.99
Analog -	23.60	3.918	22.13	3.890	28.20	4.056	22.42	3.93
Electro	38.94	4.754	32.57	4.002	38.79	4.735	33.10	4.06
Outgas	100.46	4.998	100.90	5.047	99.50	4.951	100.78	5.03
Parasitic	31.19				31.69			

Efficiency	(Spec. >70%)	75.92%	76.17%
Over Volt.	(Spec 38 ± 2V)	38.09V	38.99V
Under Volt.	(Spec. 19 ± 1V) on/off	18.09V	18.036V
	off/on	19.08V	18.864V
Input Current Limit	(Non-Spec'd)	17.96 Amps	19.45 Amps.

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FLIGHT MODEL POWER SUPPLY OUTPUTS

28.0 VOLT BUS, +32°F TEMPERATURE

OUTPUT	POWER SUPPLY 1				POWER SUPPLY 2			
	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)
BAND 1+	23.74	4.332	20.40	3.747	24.34	4.524	20.68	3.783
BAND 1-	23.89	4.346	20.52	3.735	24.28	4.415	20.69	3.766
BAND 2+	24.32	4.424	20.36	3.707	24.03	4.380	20.55	3.750
BAND 2-	24.32	4.405	20.40	3.698	24.48	4.428	20.57	3.728
BAND 3+	25.47	4.633	20.43	3.718	24.51	4.444	20.50	3.732
BAND 3-	23.56	4.294	20.39	3.720	24.20	4.409	20.57	3.753
BAND 4+	24.21	4.394	20.48	3.721	24.67	4.479	20.68	3.759
BAND 4-	23.88	4.340	20.50	3.732	24.40	4.435	20.69	3.766
BAND 5/7+	23.26	4.244	20.20	3.684	24.10	4.410	20.20	3.699
BAND 5/7-	23.20	4.230	20.20	3.683	23.93	4.360	20.23	3.689
BAND 6+	22.95	4.150	20.39	3.691	23.84	4.316	20.54	3.724
BAND 6-	23.45	4.277	20.49	3.725	24.07	4.390	20.57	3.756
SMA HTR +	24.61	4.480	22.27	4.068	25.25	4.604	22.46	4.112
SMA HTR -	24.59	4.445	22.74	4.126	25.12	4.541	22.95	4.160
SMA +7	9.88	6.152	7.707	4.900	9.358	5.772	7.818	4.989
SMA +29	31.24	4.258	30.43	4.173	31.62	4.338	30.69	4.235
SMA -29	31.50	3.839	30.42	3.770	31.47	3.814	30.70	3.833
MUX	—	—	30.20	4.294	—	—	30.40	4.309
RAD. LOGIC	9.391	5.086	8.455	4.638	9.771	5.296	8.401	4.650
COMM	9.379	5.194	7.488	4.205	9.245	5.130	7.664	4.299
ANALOG +	25.98	4.609	22.35	3.997	26.38	4.628	22.51	4.024
ANALOG -	24.81	4.094	22.43	3.939	24.81	4.295	22.58	3.967
ELECTRO	41.59	5.083	33.08	4.061	42.03	5.137	33.43	4.104
OUTGAS	101.25	5.039	103.45	5.175	100.73	5.013	102.13	5.105
PARASITIC	30.81				31.80			

EFFICIENCY	(SPEC. > 70%)	75.43%	75.31%
OVERVOLT.	(SPEC 38 ± 2V)	38.09V	39.14V
UNDERVOLT.	(SPEC. 19 ± 1V) ON/OFF	18.07V	18.01V
	OFF/ON	18.92V	18.88V
INPUT CURRENT LIMIT	(NON-SPEC'd)	15.141 Amps	16.898 Amps

FLIGHT MODEL POWER SUPPLY OUTPUTS

35.0 VOLT BUS, +32°F TEMPERATURE

OUTPUT	POWER SUPPLY 1				POWER SUPPLY 2			
	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)
BAND 1+	24.13	4.402	20.45	3.737	24.76	4.527	20.76	3.798
BAND 1−	24.33	4.429	20.46	3.726	24.15	4.395	20.78	3.780
BAND 2+	24.40	4.436	20.24	3.685	23.80	4.336	20.54	3.748
BAND 2−	24.40	4.420	20.27	3.676	24.30	4.399	20.57	3.730
BAND 3+	25.91	4.696	20.28	3.692	24.31	4.410	20.48	3.730
BAND 3−	23.36	4.256	20.24	3.695	23.98	4.377	20.55	3.749
BAND 4+	24.75	4.492	20.42	3.711	24.63	4.475	20.76	3.773
BAND 4−	24.28	4.415	20.45	3.722	24.25	4.414	20.78	3.779
BAND 5/7+	23.35	4.262	20.00	3.646	23.92	4.380	20.12	3.699
BAND 5/7−	23.30	4.247	19.99	3.646	23.68	4.314	20.15	3.667
BAND 6+	22.90	4.142	20.22	3.662	23.57	4.273	20.47	3.710
BAND 6−	23.56	4.302	20.23	3.695	23.87	4.360	20.50	3.743
SMA HTR +	24.60	4.476	22.05	4.030	25.03	4.562	22.39	4.093
SMA HTR −	24.60	4.442	22.57	4.095	24.90	4.503	22.91	4.155
SMA +7	11.206	6.902	7.67	4.877	11.492	7.034	7.819	4.988
SMA +29	31.24	4.258	30.21	4.143	31.42	4.312	30.66	4.230
SMA −29	31.50	3.822	30.20	3.553	31.28	3.788	30.67	3.655
MUX	—	—	29.88	4.252	—	—	30.26	4.205
RAD. LOGIC	9.442	5.114	8.342	4.574	9.713	5.264	8.426	4.619
COMM	9.647	5.243	7.459	4.188	9.547	5.287	7.651	4.292
ANALOG +	26.38	4.679	22.12	3.953	24.66	4.733	22.39	4.003
ANALOG −	24.97	4.456	22.19	3.908	24.78	4.310	22.46	3.941
ELECTRO	44.55	5.426	32.87	4.036	44.02	5.387	33.42	4.103
OUTGAS	103.08	5.129	104.82	5.24	101.31	5.041	103.22	5.159
PARASITIC	30.87				31.64			

EFFICIENCY	(SPEC. > 70%)	73.72%	73.45%
OVERVOLT.	(SPEC 38 ± 2V)	38.54 V	39.00 V
UNDERVOLT.	(SPEC. 19 ± 1V)	ON/OFF 18.074V	18.02V
		OFF/ON 18.911 V	18.875V
INPUT CURRENT LIMIT	(NON-SPEC'd)	11.957 Amps	12.64 Amps.

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FLIGHT MODEL POWER SUPPLY OUTPUTS

23.0 VOLT BUS, 78°F TEMPERATURE (AMBIENT)

OUTPUT	POWER SUPPLY 1				POWER SUPPLY 2			
	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)
BAND 1+	23.12	4.216	20.46	3.737	23.27	4.250	20.60	3.768
BAND 1−	23.21	4.216	20.48	3.728	23.01	4.177	20.62	3.754
BAND 2+	23.31	4.239	20.31	3.697	22.87	4.163	20.46	3.732
BAND 2−	23.32	4.218	20.34	3.688	23.12	4.181	20.49	3.712
BAND 3+	23.82	4.328	20.41	3.714	23.14	4.209	20.42	3.719
BAND 3−	22.91	4.169	20.36	3.715	22.94	4.174	20.50	3.739
BAND 4+	23.36	4.235	20.43	3.711	23.18	4.206	20.60	3.746
BAND 4−	23.18	4.208	20.46	3.723	23.07	4.188	20.62	3.751
BAND 5/7+	22.71	4.146	20.20	3.694	22.81	4.165	20.16	3.689
BAND 5/7−	22.66	4.118	20.19	3.680	22.72	4.131	20.19	3.678
BAND 6+	22.55	4.076	20.37	3.685	22.66	4.103	20.51	3.719
BAND 6−	22.82	4.157	20.37	3.720	22.81	4.156	20.54	3.750
SMAHTR +	24.41	4.451	22.21	4.057	24.68	4.508	22.42	4.103
SMAHTR −	24.86	4.501	22.65	4.107	24.78	4.486	22.87	4.145
SMA +7	8.939	5.508	7.656	4.881	9.021	5.553	7.759	4.965
SMA +29	31.74	4.329	30.36	4.165	31.99	4.388	30.58	4.221
SMA −29	32.05	4.068	30.34	3.955	31.82	4.056	30.60	3.998
MUX	—	—	30.09	4.269	—	—	30.28	4.289
RAD. LOGIC	9.508	5.152	8.544	4.687	9.646	5.228	8.552	4.691
COMM	9.219	5.106	7.600	4.270	9.308	5.154	7.709	4.328
ANALOG +	25.85	4.590	22.40	4.005	26.24	4.661	22.52	4.027
ANALOG −	23.62	3.924	22.46	3.939	23.25	3.960	22.59	3.960
ELECTRO	38.48	4.696	32.99	4.051	38.23	4.666	33.28	4.087
OUTGAS	101.07	5.032	102.39	5.120	99.87	4.970	102.04	5.100
PARASITIC	30.92				31.31			

EFFICIENCY	(SPEC. > 70%)	75.18%	75.27%
OVERVOLT.	(SPEC 38 ± 2V)	38.50V	38.85V
UNDERVOLT.	(SPEC. 19 ± 1V) ON/OFF	18.016V	18.042V
	OFF/ON	18.919V	18.89V
INPUT CURRENT LIMIT	(NON-SPEC'd)	18.14 AMPS	19.92 AMPS

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FLIGHT MODEL POWER SUPPLY OUTPUTS

28.0 VOLT BUS, 78°F TEMPERATURE (AMBIENT)

OUTPUT	POWER SUPPLY 1				POWER SUPPLY 2			
	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)
BAND 1+	23.56	4.298	20.58	3.760	24.25	4.434	20.71	3.795
BAND 1-	23.70	4.310	20.59	3.750	23.73	4.315	20.73	3.775
BAND 2+	24.12	4.389	20.43	3.719	23.61	4.299	20.57	3.757
BAND 2-	24.13	4.368	20.46	3.709	24.00	4.358	20.59	3.732
BAND 3+	25.39	4.617	20.51	3.733	24.30	4.390	20.51	3.738
BAND 3-	23.37	4.257	20.45	3.732	23.78	4.332	20.60	3.758
BAND 4+	24.04	4.363	20.55	3.734	24.16	4.385	20.71	3.769
BAND 4-	23.70	4.306	20.57	3.744	23.89	4.341	20.73	3.774
BAND 5/7+	23.20	4.229	20.27	3.700	23.63	4.324	20.20	3.708
BAND 5/7-	23.14	4.216	20.26	3.695	23.45	4.270	20.23	3.688
BAND 6+	22.88	4.155	20.46	3.701	23.32	4.220	20.55	3.726
BAND 6-	23.38	4.264	20.46	3.737	23.58	4.300	20.58	3.760
SMA HTR +	24.66	4.500	22.32	4.077	25.46	4.648	22.46	4.112
SMA HTR -	25.24	4.560	22.79	4.132	25.42	4.596	22.94	4.158
SMA +7	9.178	5.656	7.716	4.919	9.202	5.716	7.808	4.999
SMA +29	31.92	4.351	30.48	4.180	31.45	4.383	30.68	4.233
SMA -29	32.27	3.920	30.47	3.781	31.77	3.989	30.69	3.857
MUX	—	—	30.24	4.306	—	—	30.34	4.303
RAD. LOGIC	9.602	5.700	8.581	4.709	9.721	5.768	8.557	4.700
COMM	9.466	5.242	7.577	4.259	9.435	5.226	7.718	4.334
ANALOG +	26.64	4.727	22.55	4.014	26.85	4.761	22.53	4.031
ANALOG -	25.44	4.061	22.51	3.947	25.20	4.069	22.59	3.962
ELECTRO	41.70	5.096	33.13	4.069	41.60	5.085	33.40	4.103
OUTGAS	102.58	5.105	104.53	5.230	100.73	5.014	103.01	5.154
PARASITIC	30.94				31.17			

EFFICIENCY	(SPEC. > 70%)	74.43%	74.84%
OVERVOLT.	(SPEC 38 ± 2V)	37.8V	38.8V
UNDERVOLT.	(SPEC. 19 ± 1V)	ON/OFF 18.07V	18.24V
		OFF/ON 18.9V	18.9V
INPUT CURRENT LIMIT	(NON-SPEC'd)	15.96 Amps	17.20 Amps

FLIGHT MODEL POWER SUPPLY OUTPUTS

35.0 VOLT BUS; 78°F TEMPERATURE (AMBIENT)

OUTPUT	POWER SUPPLY 1				POWER SUPPLY 2			
	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)
BAND 1+	23.98	4.372	20.53	3.752	24.56	4.490	20.79	3.812
BAND 1-	24.17	4.398	20.54	3.741	23.96	4.361	20.81	3.790
BAND 2+	24.28	4.416	20.34	3.706	23.67	4.307	20.62	3.765
BAND 2-	24.28	4.396	20.37	3.695	24.18	4.384	20.64	3.744
BAND 3+	26.21	4.770	20.10	3.717	24.29	4.423	20.55	3.746
BAND 3-	23.27	4.240	20.36	3.716	23.86	4.350	20.63	3.765
BAND 4+	24.61	4.466	20.51	3.726	24.46	4.443	20.80	3.785
BAND 4-	24.13	4.386	20.53	3.737	24.09	4.381	20.81	3.789
BAND 5/7+	23.31	4.253	20.08	3.668	23.83	4.363	20.17	3.674
BAND 5/7-	23.27	4.242	20.07	3.659	23.60	4.302	20.19	3.676
BAND 6+	22.84	4.131	20.29	3.674	23.47	4.250	20.53	3.721
BAND 6-	23.50	4.290	20.30	3.706	23.78	4.342	20.55	3.755
SMA HTR +	24.72	4.512	22.11	4.041	25.56	4.657	22.41	4.102
SMA HTR -	25.05	4.528	22.62	4.103	25.44	4.601	22.92	4.161
SMA +7	9.807	6.043	7.695	4.903	9.759	6.019	7.827	5.009
SMA +29	31.73	4.328	30.31	4.156	31.97	4.385	30.70	4.236
SMA -29	32.05	3.671	30.30	3.471	31.80	3.723	30.72	3.625
MUX	—	—	29.95	4.262	—	—	30.26	4.288
RAD. LOGIC	9.58	5.199	8.465	4.644	9.853	5.340	8.516	4.673
COMM	9.70	5.378	7.531	4.234	9.638	5.383	7.709	4.326
ANALOG +	26.88	4.779	22.21	3.975	27.23	5.339	22.46	4.018
ANALOG -	24.42	4.470	22.29	3.915	25.33	4.639	22.53	3.949
ELECTRO	45.29	5.544	32.97	4.050	47.76	5.490	33.46	4.111
OUTGAS	103.69	5.165	105.21	5.274	102.10	5.085	103.84	5.192
PARASITIC	31.00							

EFFICIENCY	(SPEC. >70%)	73.25%	73.15%
OVER VOLT.	(SPEC 38±2V)	38.37V	38.93V
UNDER VOLT.	(SPEC. 19±1V)	ON/OFF 18.09V	18.08V
		OFF/ON 18.95V	18.88V
INPUT CURRENT LIMIT	(NON-SPEC'd)	12.29 Amps.	12.699 Amps.

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FLIGHT MODEL POWER SUPPLY OUTPUTS

23.0 VOLT BUS, +131°F TEMPERATURE

OUTPUT	POWER SUPPLY 1				POWER SUPPLY 2			
	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)
BAND 1+	22.99	4.192	20.97	3.765	23.11	4.217	20.60	3.765
BAND 1−	23.08	4.190	20.99	3.754	22.85	4.146	20.61	3.750
BAND 2+	23.21	4.220	20.91	3.725	22.74	4.136	20.47	3.730
BAND 2−	23.22	4.197	20.95	3.715	23.00	4.156	20.49	3.709
BAND 3+	23.84	4.330	21.02	3.748	23.01	4.184	20.42	3.718
BAND 3−	22.81	4.148	20.95	3.744	22.84	4.152	20.51	3.736
BAND 4+	23.24	4.214	20.91	3.739	23.04	4.179	20.59	3.744
BAND 4−	23.06	4.183	20.94	3.749	22.94	4.162	20.61	3.746
BAND 5/7+	22.68	4.136	20.32	3.732	22.72	4.143	20.14	3.689
BAND 5/7−	22.62	4.108	20.31	3.717	22.64	4.113	20.17	3.673
BAND 6+	22.51	4.067	20.50	3.723	22.56	4.089	20.50	3.715
BAND 6−	22.78	4.150	20.50	3.758	22.72	4.138	20.54	3.747
SMA HTR +	24.29	4.429	22.33	4.098	24.57	4.484	22.43	4.103
SMA HTR −	24.77	4.483	22.78	4.146	24.67	4.465	22.89	4.146
SMA +7	9.106	5.613	7.688	4.919	9.189	5.656	7.730	4.965
SMA +29	32.36	4.414	30.54	4.190	32.74	4.490	30.50	4.207
SMA −29	32.86	4.192	30.53	3.994	32.48	4.161	30.52	3.986
MUX	—	—	30.34	4.316	—	—	30.20	4.277
RAD. LOGIC	9.712	5.264	8.747	4.802	9.813	5.319	8.656	4.752
COVU	9.381	5.196	7.666	4.312	9.486	5.254	7.768	4.366
ANALOG +	26.51	4.708	22.59	4.040	27.01	4.799	22.51	4.023
ANALOG −	23.94	3.964	22.66	3.973	23.77	3.990	22.57	3.956
ELECTRO	38.34	4.677	33.18	4.076	38.03	4.640	33.17	4.073
OUTGAS	102.82	5.119	103.53	5.176	101.76	5.066	103.01	5.149
PARASITIC	31.02							

EFFICIENCY	(SPEC. >70%)	74.05%	74.39%
OVERVOLT.	(SPEC 38±2V)	38.3V	38.5V
UNDERVOLT.	(SPEC. 19±1V)	ON/OFF 18.00V	18.03V
		OFF/ON 18.90V	18.90V
INPUT CURRENT LIMIT	(NON-SPEC'd)	18.963 Amps	20.90 Amps.

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FLIGHT MODEL POWER SUPPLY OUTPUTS

28.0 VOLT BUS, 131°F TEMPERATURE

OUTPUT	POWER SUPPLY 1				POWER SUPPLY 2			
	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)
BAND 1+	23.40	4.269	20.65	3.772	23.91	4.369	20.72	3.793
BAND 1−	23.54	4.279	20.66	3.761	23.42	4.256	20.75	3.775
BAND 2+	23.94	4.357	20.44	3.724	23.29	4.240	20.55	3.750
BAND 2−	23.95	4.333	20.49	3.712	23.73	4.294	20.57	3.725
BAND 3+	23.30	4.603	20.55	3.742	23.80	4.330	20.48	3.773
BAND 3−	23.19	4.223	20.49	3.737	23.46	4.271	20.58	3.750
BAND 4+	23.89	4.337	20.60	3.743	23.84	4.328	20.72	3.768
BAND 4−	23.54	4.275	20.63	3.753	23.59	4.284	20.73	3.770
BAND 5/7+	23.12	4.215	20.35	3.717	23.40	4.276	20.22	3.710
BAND 5/7−	23.06	4.198	20.34	3.707	23.25	4.230	20.25	3.688
BAND 6+	22.79	4.120	20.53	3.714	23.11	4.180	20.58	3.726
BAND 6−	23.30	4.249	20.53	3.750	23.36	4.259	20.60	3.761
SMA HTR +	24.51	4.472	22.38	4.089	25.24	4.608	22.48	4.114
SMA HTR −	25.33	4.590	22.84	4.141	25.39	4.600	22.96	4.160
SMA +17	9.227	5.687	7.708	4.927	9.324	5.740	7.780	4.998
SMA +29	32.39	4.417	30.58	4.181	32.72	4.487	30.62	4.223
SMA −29	32.84	4.036	30.40	3.798	32.51	4.027	30.64	3.852
MUX	—	—	30.28	4.311	—	—	30.32	4.298
RAD. LOGIC	9.768	5.293	8.709	4.782	9.942	5.389	8.668	4.759
CONV.	9.555	5.293	7.662	4.310	9.590	5.311	7.768	4.365
ANALOG +	27.07	4.805	22.51	4.023	27.50	4.885	22.55	4.030
ANALOG −	25.59	4.185	22.58	3.957	25.87	4.241	22.61	3.950
ELECTRO	41.55	5.077	33.14	4.068	41.22	5.037	33.32	4.092
OUTGAS	103.95	5.175	105.92	5.298	102.63	5.110	104.40	5.220
PARASITIC	31.07							

EFFICIENCY	(SPEC. >70%)	73.91%	74.21%
OVERVOLT.	(SPEC 38±2V)	38.25V	38.82V
UNDERVOLT.	(SPEC. 19±1V) on/off	18.08V	18.08V
	off/on	18.87V	18.88V
INPUT CURRENT LIMIT	(NON-SPEC'd)	NA	18.863 Amps

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OF POOR QUALITY

FLIGHT MODEL POWER SUPPLY OUTPUTS

35.0 VOLT BUS, +131°F TEMPERATURE

OUTPUT	POWER SUPPLY 1				POWER SUPPLY 2			
	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	OPEN CIRCUIT VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)	PICTURE MODE VOLTAGE (VOLTS)	TLMY OUTPUT (VOLTS)
BAND 1+	23.70	4.325	20.62	3.766	24.37	4.451	20.81	3.811
BAND 1-	23.89	4.346	20.63	3.755	23.79	4.325	20.83	3.790
BAND 2+	24.11	4.389	20.45	3.722	23.57	4.289	20.67	3.772
BAND 2-	24.11	4.365	20.48	3.710	24.11	4.365	20.69	3.748
BAND 3+	24.21	4.772	20.53	3.737	24.18	4.401	20.60	3.754
BAND 3-	23.16	4.246	20.48	3.732	23.82	4.339	20.69	3.771
BAND 4+	24.33	4.418	20.59	3.740	24.30	4.412	20.81	3.785
BAND 4-	23.84	4.333	20.62	3.749	23.95	4.351	20.82	3.787
BAND 5/7+	23.22	4.236	20.20	3.688	23.74	4.343	20.20	3.713
BAND 5/7-	23.16	4.218	20.19	3.677	23.50	4.289	20.23	3.681
BAND 6+	22.78	4.118	20.40	3.690	23.37	4.228	20.57	3.725
BAND 6-	23.41	4.273	20.41	3.725	23.70	4.323	20.59	3.760
SMA HTR +	24.54	4.479	22.23	4.059	25.60	4.687	22.44	4.105
SMA HTR -	25.57	4.636	22.72	4.118	25.78	4.673	22.86	4.161
SMA +7	9.645	5.945	7.71	4.928	9.747	6.005	7.81	5.021
SMA +29	32.37	4.414	30.41	4.166	32.81	4.497	30.68	4.230
SMA -29	32.84	3.850	30.39	3.517	32.60	3.947	30.70	3.623
MUX	—	—	30.06	4.269	—	—	30.25	4.283
RAD. LOGIC	9.828	5.327	8.621	4.731	10.10	5.475	8.634	4.739
COMM	9.820	5.442	7.633	4.292	9.814	5.435	7.766	4.362
ANALOG +	27.62	4.909	22.35	3.995	28.02	4.981	22.50	4.023
ANALOG -	26.09	4.503	22.42	3.930	26.09	4.364	22.56	3.949
ELECTRO	45.06	5.516	33.07	4.060	44.49	5.445	33.43	4.105
OUTGAS	105.40	5.248	106.95	5.348	104.02	5.178	105.24	5.261
PARASITIC	31.23				32.01			

EFFICIENCY	(SPEC. > 70%)	72.45%	72.61%
OVERVOLT.	(SPEC 38 ± 2V)	38.25V	38.81V
UNDERVOLT.	(SPEC. 19 ± 1V) on/off	18.11V	18.06V
	off/on	18.99V	18.89V
INPUT CURRENT LIMIT	(NON-SPEC'd)	12.512 Amps	13.234 Amps.

Appendix C - Part 2

Power Supply Performance Data

Short Form Test Data

10.4 Performance test - Long Form

MAC TEST 323 Feb 3 1982

PROTOFLIGHT NA, OR FLIGHT ✓, S/N 004 TEMPERATURE: 32°F

IN-PROCESS NA, QUAL NA, OR ACCEPTANCE ✓

TESTING PHASE Final Cold - Long Form LINE VOLTAGE: 23.0 VOLTS

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.1.1	Calibrate cmd gen	--	--	✓	✓
5.10.2.1	Input bus current	S26-1, S27-2 (S27-4 for redundant)		0.227A ✓	.230A
5.10.2.2	MUX output voltage	S26-3, S27-1	30.0 ±0.90V	29.82V	29.81V
5.10.2.3	MUX load current	S26-3, S27-12	3.55 ±0.40A	3.242A	32.42A

The rest of Section 5.10.2 requires only checking voltage - indicate by checkmarks.

5.10.2.4.1	B1 + output voltage	S26-1, S27-5	✓	✓
5.10.2.4.2	B1 -	S27-6	✓	✓
5.10.2.4.3	B1 -	S27-5	✓	✓
5.10.2.4.4	B1 +	S27-7	✓	✓
5.10.2.5.1	B2 +	S27-7	✓	✓
5.10.2.5.2	B2 -	S27-8	✓	✓
5.10.2.5.3	B2 -	S27-8	✓	✓
5.10.2.5.4	B2 +	S27-7	✓	✓
5.10.2.6.1	B3 +	S27-9	✓	✓
5.10.2.6.2	B3 -	S27-10	✓	✓
5.10.2.6.3	B3 -	S27-10	✓	✓
5.10.2.6.4	B3 +	S27-9	✓	✓
5.10.2.7.1	B4 +	S27-11	✓	✓
5.10.2.7.2	B4 -	S27-12	✓	✓
5.10.2.7.3	B4 -	S27-12	✓	✓
5.10.2.7.4	B4 +	S26-1, S27-11	✓	✓
5.10.2.8.1	B5,7+	S26-2, S27-1	✓	✓
5.10.2.8.2	B5,7-	S27-2	✓	✓
5.10.2.8.3	B5,7-	S27-2	✓	✓
5.10.2.8.4	B5,7+	S27-1	✓	✓
5.10.2.9.1	B6 +	S27-3	✓	✓
5.10.2.9.2	B6 - output voltage	S26-2, S27-4	✓	✓

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDAN
5.10.2.9.3	B6 + output voltage	S26-2, S27-4		✓	✓
5.10.2.9.4	B6 + output voltage	S26-2, S27-3		✓	✓
5.10.2.10.1	SMA [redacted] + output voltage	S27-5		✓	✓
5.10.2.10.2	-	S27-6		✓	✓
5.10.2.10.3	-	S27-6		✓	✓
5.10.2.10.4	-	S27-5		✓	✓
5.10.2.11.1	-7V	S26-2, S27-7		✓	
5.10.2.11.2	-7V	(S27-8 for RDT)			✓
5.10.2.12.1	-29V	S26-2, S27-9		✓	
		(S27-11 for RDT)			✓
5.10.2.12.2	-29V	S26-2, S27-10		✓	
		(S27-12 for RDT)			✓
5.10.2.12.3	-29V	S26-2, S27-10		✓	✓
5.10.2.12.4	SMA [redacted] -29V	S26-2, S27-9		✓	✓
5.10.2.13.1	Radiometer	S26-3, S27-2		✓	✓
5.10.2.13.2	Radiometer	S27-2		✓	✓
5.10.2.14.1	CDVT	S27-3		✓	✓
5.10.2.14.2	CDVU	S27-3		✓	✓
5.10.2.15.1	Analog +	S27-4		✓	✓
5.10.2.15.2	Analog -	S27-5		✓	✓
5.10.2.15.3	Analog -	S27-5		✓	✓
5.10.2.15.4	Analog +	S27-4		✓	✓
5.10.2.16.1	Electromech.	S27-6		✓	✓
5.10.2.16.2	Electromech.	S27-6		✓	✓
5.10.2.17.1	Outgas output voltage	S26-3, S27-7		✓	✓
5.10.3.1	Bus voltage	S26-1, S27-1			
		(S27-3 for RDT)		28.08	(49) 28.02
5.10.3.2	MUX load current	S26-3, S27-12	4.130 ±0.025A	41.41 mV	[illegible] 41.18
5.10.3.3	Bus current	S26-1, S27-2			
		(S27-4 for RDT)		152.48	(50) 155.14
5.10.3.3.2	BPS Voltage	S26-1, S27-1 S27-3)		28.02	28.02
5.10.3.3.3	BPS Current	S26-1, S27-2 (S27-4)		152.18	155.84
5.10.3.3.4	MUX Current	S26-3; S27-12		41.30	41.43

(2)

10.4 Performance test (continued)

FEB 03 1982

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	REDUNDA
5.10.3.4.1	B1 + output voltage	S26-1, S27-5	20.50 ±2.50V	20.15 (1)	20.4
5.10.3.4.2	B1 + output ripple	Look on Scope	<600 mV pk-pk	20	30
5.10.3.4.3	B1 - output voltage	S26-1, S27-6	-20.50 ±2.50V	-20.16 (2)	20.4
5.10.3.4.4	B1 - output ripple	Look on Scope	<600 mV pk-pk	20	30
5.10.3.5.1	B2 + output voltage	S26-1, S27-7	20.50 ±2.50V	19.98 (3)	20.2
5.10.3.5.2	B2 + output ripple	Look on Scope	<600 mV pk-pk	30	20
5.10.3.5.3	B2 - output voltage	S26-1, S27-8	-20.50 ±2.50V	-20.02 (4)	20.3
5.10.3.5.4	B2 - output ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.6.1	B3 + output voltage	S26-1, S27-9	20.50 ±2.50V	20.07 (5)	20.2
5.10.3.6.2	B3 + output ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.6.3	B3 - output voltage	S26-1, S27-10	-20.50 ±2.50V	-20.03 (6)	20.3
5.10.3.6.4	B3 - output ripple	Seen on Scope	<600 mV pk-pk	30	20
5.10.3.7.1	B4 + output voltage	S26-1, S27-11	20.50 ±2.50V	20.12 (7)	20.4
5.10.3.7.2	B4 + output ripple	Seen on Scope	<600 mV pk-pk	20	20
.10.3.7.3	B4 - output voltage	S26-1, S27-12	-20.50 ±2.50V	-20.14 (8)	20.4
5.10.3.7.4	B4 - output ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.8.1	B5,7 + voltage	S26-2, S27-1	20.50 ±2.50V	19.86 (9)	20.0
5.10.3.8.2	B5,7 + ripple	Seen on Scope	<600 mV pk-pk	20	40
5.10.3.8.3	B5,7 - voltage	S26-3, S27-2	-20.50 ±2.50V	-19.84 (10)	20.0
5.10.3.8.4	B5,7 - ripple	Seen on Scope	<600 mV pk-pk	20	40
5.10.3.9.1	B6 + voltage	S26-2, S27-3	20.50 ±2.50V	20.03 (11)	20.3
5.10.3.9.2	B6 + ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.9.3	B6 - voltage	S26-2, S27-4	-20.50 ±2.50V	-20.04 (12)	20.3
5.10.3.9.4	B6 - ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.10.1	SMA Htr + voltage	S26-2, S27-5	21.20 ±2.12V	21.87 (13)	22.2
5.10.3.10.2	SMA Htr + ripple	Seen on Scope	<630 mV pk-pk	20	20
5.10.3.10.3	SMA Htr - voltage	S26-2, S27-6	-21.20 ±2.12 V	-22.32 (14)	22.6
5.10.3.10.4	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	20	20
5.10.3.11.1	SMA +7V voltage	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	7.558 (15)	7.71
5.10.3.11.2	SMA +7V output ripple	Seen on Scope	<210 mV pk-pk	25	40

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	[illegible]	[illegible]
5.10.3.12.1	SMA +29V output voltage	S26-2, S27-9 (S27-11 for HDT)	29.50 ±1.50V	24.97 (ea)	30.40
5.10.3.12.2	SMA +29V ripple	Scan on Scope	<870 mV, pk-pk	30	40
5.10.3.12.3	SMA -29V voltage	S26-2, S27-10 (S27-12 for HDT)	-29.50 ±1.50V	-29.96 (ea)	-30.42
5.10.3.12.4	SMA -29V ripple	Scan on Scope	<870 mV pk-pk	30	40
5.10.3.13.1	MUX voltage	S26-3, S27-1	30.00 ±0.90V	29.70 (ea)	30.10
5.10.3.13.2	MUX ripple	Scan on Scope	<900 mV, pk-pk	40	45
5.10.3.14.1	Radiometer voltage	S26-3, S27-2	8.50 ±0.85V	8.303 (ea)	8.39
5.10.3.14.2	Radiometer ripple	Scan on Scope	<250 mV pk-pk	20	30
5.10.3.15.1	CDVU voltage	S26-3, S27-3	8.00 ±0.80V	7.519 (ea)	7.66
5.10.3.15.2	CDVU ripple	Scan on Scope	<240 mV pk-pk	20	30
5.10.3.16.1	Analog + voltage	S26-3, S27-4	21.20 ±2.12V	22.06 (ea)	22.39
5.10.3.16.2	Analog + ripple	Scan on Scope	<630 mV pk-pk	25	30
5.10.3.16.3	Analog - voltage	S26-3, S27-5	-21.20 ±2.12V	-22.13 (ea)	-22.42
5.10.3.16.4	Analog - ripple	Scan on Scope	<630 mV pk-pk	20	30
5.10.3.17.1	Electromech. voltage	S26-3, S27-6	33.40 ±3.34V	32.57 (ea)	33.10
5.10.3.17.2	Electromech. ripple	Scan on Scope	<1.0V pk-pk	20	40
5.10.3.18.1	Outgas voltage	S26-3, S27-7	100.0 ±12.0V	100.90	100.78
5.10.3.18.2	Outgas output ripple	Scan on Scope	<3.0V pk-pk	75mV	100mV
5.10.4.1	Input current telemetry	S26-4, S28-1 (S28-6 for HDT)		4.652	4.62
5.10.4.2.1	Band 1 + volt. telemetry	S26-6, S28-5		3.687	3.74
5.10.4.2.2	Band 1 -	S28-6		3.675	3.72
5.10.4.3.1	Band 2+	S28-7		3.646	3.70
5.10.4.3.2	Band 2-	S28-8		3.635	3.68
5.10.4.4.1	Band 3+	S28-9		3.660	3.69
5.10.4.4.2	Band 3-	S28-10		3.666	3.71
5.10.4.5.1	Band 4+	S28-11		3.661	3.72
5.10.4.5.2	Band 4-	S26-4, S28-12		3.672	3.72
5.10.4.6.1	Band 5,7+	S26-5, S28-1		3.642	3.66
5.10.4.6.2	Band 5,7- volt. telemetry	S26-5, S28-2		3.626	3.65

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	REDUNDA
5.10.4.7.1	Band 6 + volt. telemtry	S26-5, S28-3		3.634	3.6
5.10.4.7.2	Band 6 -	S28-4		3.664	3.7
5.10.4.8.1	SMA Htr +	S28-5		4.002	4.0
5.10.4.8.2	SMA Htr -	S28-6		4.052	4.11
5.10.4.9	SMA +7V	S26-5, S27-7 (S27-8 for RDT)		4.811	4.9
5.10.4.10.1	SMA +29V	S26-5, S28-9 (S27-11 for RDT)		4.115	4.19
5.10.4.10.2	SMA -29V	S26-5, S28-10 (S27-12 for RDT)		3.898	3.9
5.10.4.11	MUX	S26-6, S28-1		4.224	4.2
5.10.4.12	Radiometer	S26-6, S28-2		4.558	4.66
5.10.4.13	CDVU	S26-6, S28-3		4.222	4.2
5.10.4.14.1	Analog + volt. telemtry	S26-6, S28-4		3.946	3.9
5.10.4.14.2	Analog -	S26-6, S28-5		3.890	3.9
.10.4.15	Electromech.	S28-6		4.002	4.0
5.10.4.16	Outgas volt. telemetry	S26-6, S28-7		5.042	5.0
5.10.5.1.1	Analog + load current	S26-3, S27-11 mV ÷ 10 = Amps		15.472 (24)	15.6
5.10.5.1.2	MUX	S26-3, S27-12 mV ÷ 10 = Amps		41.51 (25)	41.5
5.10.5.1.3	Band 1 +	S26-7, S34-1 mV ÷ 0.5 = mA		89.23 (26)	91.0
5.10.5.1.4	Band 1 -	S34-2		−89.91 (27)	91.2
5.10.5.1.5	2 +	S34-3		88.83 (28)	90.1
5.10.5.1.6	2 -	S34-4		−89.69 (29)	91.2
5.10.5.1.7	3 +	S34-5		89.53 (30)	90.3
5.10.5.1.8	3 -	S34-6		−89.43 (31)	90.6
5.10.5.1.9	4 +	S34-7		89.64 (32)	91.0
5.10.5.1.10	4 -	S34-8		−89.36 (33)	90.6
5.10.5.1.11	5,7 +	S34-9		89.50 (34)	90.8
5.10.5.1.12	5,7 -	S34-10		−88.71 (35)	89.3
5.10.5.1.13	6 +	S34-11		46.63 (36)	47.3
5.10.5.1.14	Band 6 -	S26-7, S34-12		−46.48 (37)	47.2
5.10.5.1.15	SMA Htr +	S26-8, S34-1 mV ÷ 0.5 = mA		47.20 (38)	47.9
5.10.5.1.16	SMA Htr - load current	S26-8, S34-2 mV = mA		−8.832 (39)	8.9

(5)

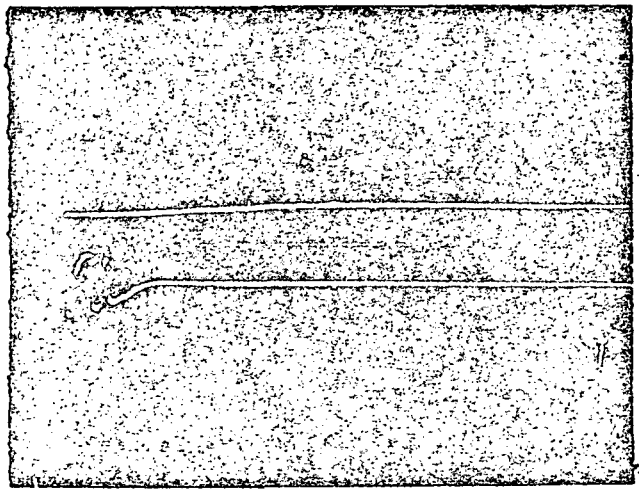
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	REDUN
5.10.5.1.17	SMA +29V load current	S26-8, S34-3	mV ÷ 0.402 = mA	49.92 (46)	50
5.10.5.1.18	SMA -29V	S34-4	mV ÷ 0.402 = mA	-49.66 (47)	50
5.10.5.1.19	SMA +7V	S34-5	V ÷ 0.1 = Amps	27.5 (42)	27
5.10.5.1.20	Analog -	S34-6	mV ÷ 0.402 = mA	-265.2 (43)	26
5.10.5.1.21	Radiometer	S34-9	mV ÷ 0.5 = mA	149.00 (44)	150
5.10.5.1.22	CDVU	S34-10	mV ÷ 0.5 = mA	269.4 (45)	27
5.10.5.1.23	Electromech. load current	S26-8, S34-11	mV ÷ 0.402 = mA	207.3 (44)	21
5.10.5.2.1	Bus power supply voltage	S26-1, S27-1 (S27-3 for RDT)		23.05 (47)	23.
5.10.5.2.2	Bus input current	S26-1, S27-2 (S27-4 for RDT)	mV ÷ 10 = Amps	153.16 (48)	156
5.10.5.2.3	P_{IN} (Section 5.10.5)			353.093	360
5.10.5.2.4	P_{IN} (Section 5.10.3)			351.161	357
5.10.5.2.5	P_{IN} (avg)			352.077	358.5
5.10.5.2.9	Input current at current limit		26-1, 27-2 (26-1 27-4 Rdt)	179.6	184
	Input voltage at current limit		27-1 (27-3 Rdt)	23.03	22.
	MUX voltage at current limit		26-3, 27-1	27.33	27
	MUX current at current limit		27-12	51.38	50.
5.10.5.3.1	P_{OUT}			265.571	271.5
5.10.5.3.2	Efficiency		>70%	75.92%	76.

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUND
5.10.6.1	+7V output pulsed	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	6.839	7.11

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-PRIMARY SIDE

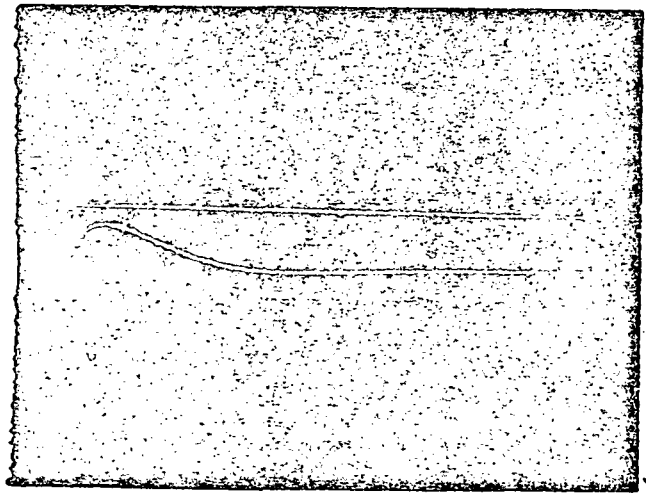


7.531 v. Hi.
6.839 v. Lo.

(0.2A) CURRENT/DIV: 2A
(1V) VOLTAGE/DIV: 2 volts
(200uS) SWEEP RATE: 20 usec

zero

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load on SMA +7V outputs is being removed - PRIMARY SIDE



2 amps D

(0.2A) CURRENT/DIV: 4
(1V) VOLTAGE/DIV: 2v/Div
(200uS) SWEEP RATE: 50 usec

zero for Both

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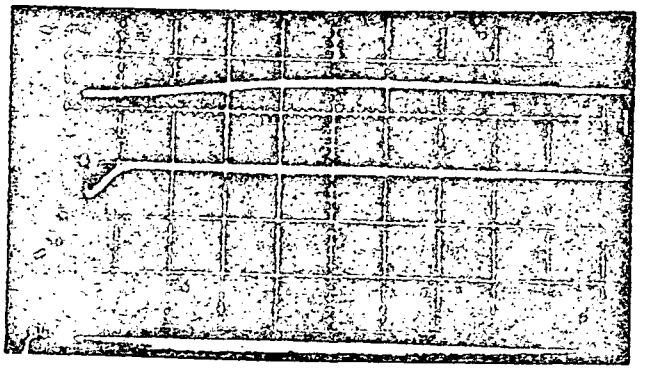
10.4 Performance test (continued)

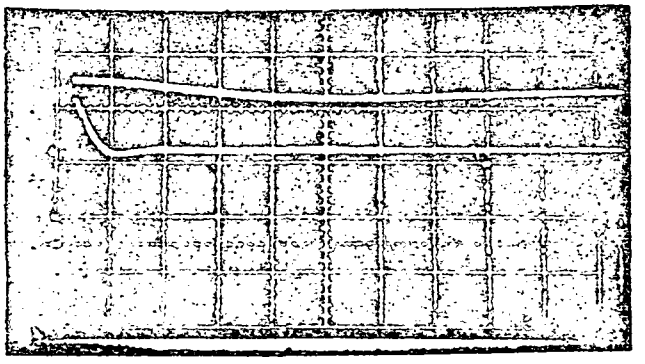
REF. PARA. DESCRIPTION

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-REDUNDANT SIDE



(0.2A) CURRENT/DIV: 2A A.C
(1V) VOLTAGE/DIV: 2V
(200uS) SWEEP RATE: 200μsec

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load is being removed-REDUNDANT SIDE



(0.2A) CURRENT/DIV: 2A A.C
(1V) VOLTAGE/DIV: 2V
(200uS) SWEEP RATE: 200μsec

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HAC TEST S32

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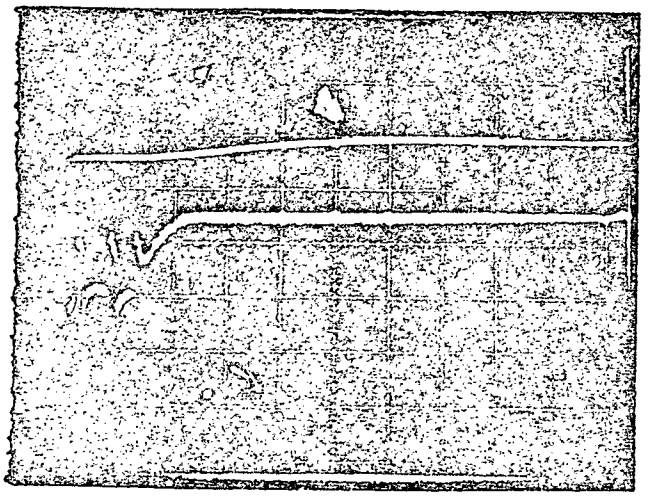
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	REDUN
5.10.6.3	Input bus current	S26-1, S27-2 (S27-4 for RDT)		156.09	162
5.10.6.4	SMA +7V TM- pulsed	S26-5, S28-7 (S28-8 for RDT)		4.417	4.6
5.10.6.5	SMA +7V load current-pulsed	(S26-8, S34-5		458.6	476

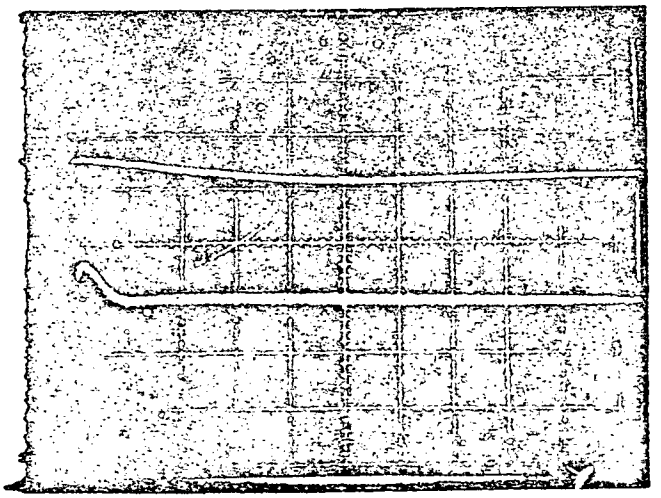
5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load curre SIDE



(1A)* SMA CURRENT/DIV: 100m
(NA) BUS CURRENT/DIV: 1 amp
(200uS) SWEEP RATE: 200 μs

* Using 0.1 Ω shunt and 100 mV/Div on scope

5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as pulse-load is being removed-PRIMARY SIDE



(1A)* SMA CURRENT/DIV: 100m
(NA) BUS CURRENT/DIV: 1 amp
(200uS) SWEEP RATE: 200 μs

*Using 0.1 Ω shunt and 100mV/Div on Scope

10.4 Performance test (continued)

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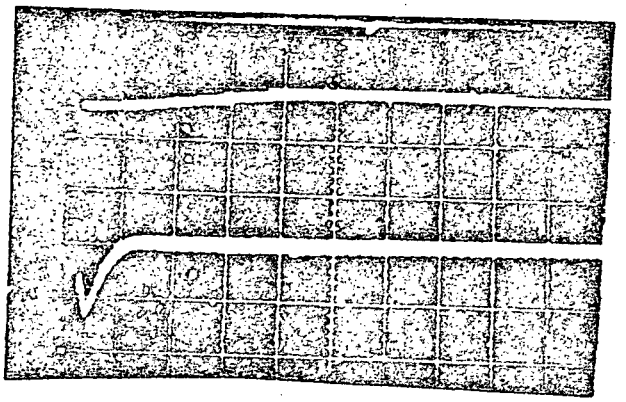
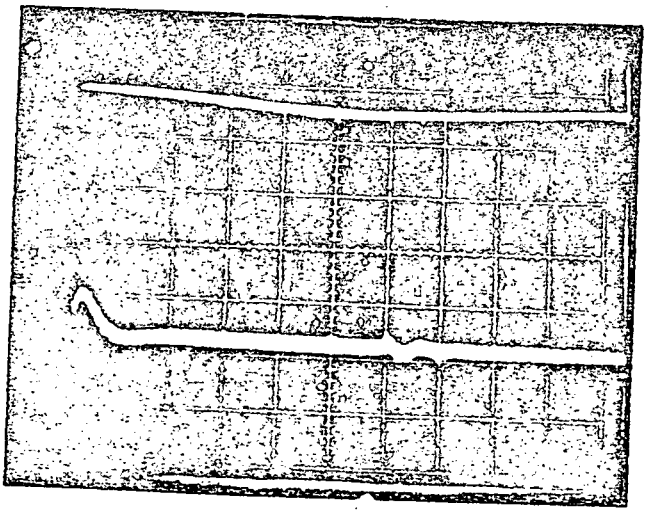
REF. PARA.	DESCRIPTION
5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as SMA + 7V output is being pulse loaded - REDUNDANT SIDE



(1A)* SMA CURRENT/DIV: 100 m
(2A) BUS CURRENT/DIV: 2 A
(200uS) SWEEP RATE: 200 u

*Using 0.1 Ω shunt and 100 mV/Div on scope.

REF. PARA.	DESCRIPTION
5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as pulse-load is removed - REDUNDANT SIDE



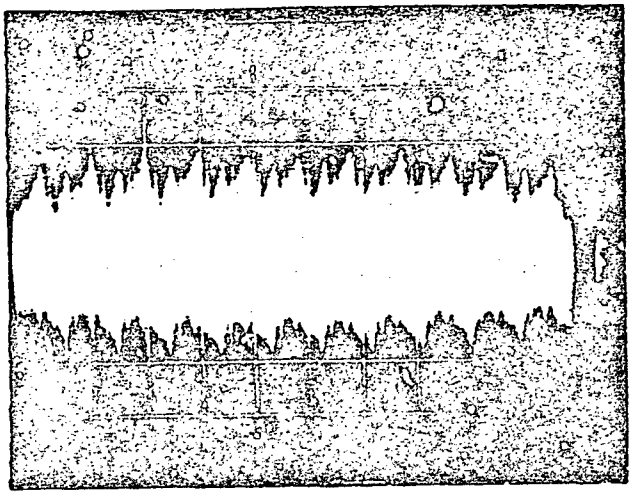
(1A)* SMA CURRENT/DIV: 100 m
(2A) BUS CURRENT/DIV: 2 A
(200uS) SWEEP RATE: 200 u

*Using 0.1 Ω shunt and 100mV/Div on scope.

10.4 Performance test (continued)

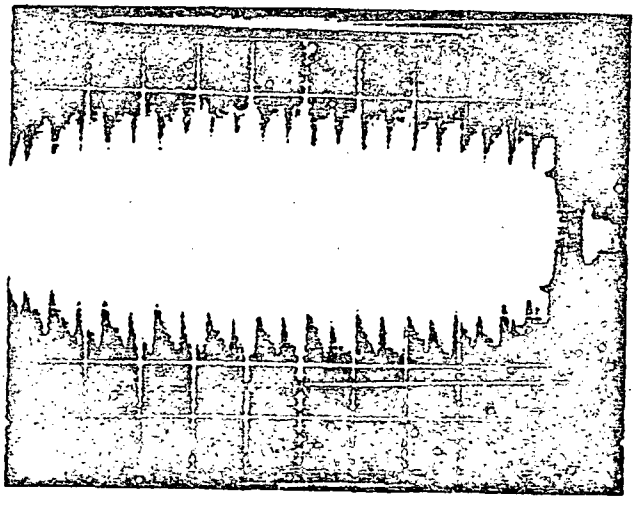
REF. PARA. DESCRIPTION

5.10.7.1 Photograph of reflected input current ripple - PRIMARY SIDE



(1mA) CURRENT/DIV: 2mA A.
(10uS) SWEEP RATE: 10uSEC

5.10.7.1 Photograph of reflected input current ripple - REDUNDANT SIDE



(1mA) CURRENT/DIV: 2mA A
(10uS) SWEEP RATE: 10usec

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5.10.8.1.1 Input current - full load S26-1, S27-2 (S27-4 for RDT)

5.10.8.1.2 Input current w/o analog load Same

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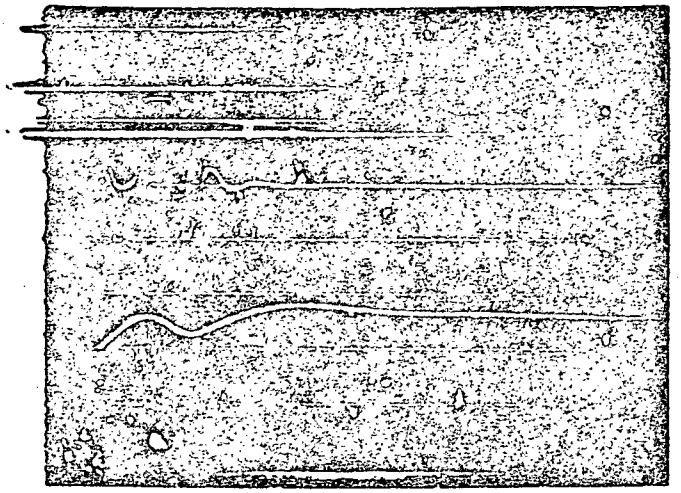
5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is enabled - PRIMARY SIDE

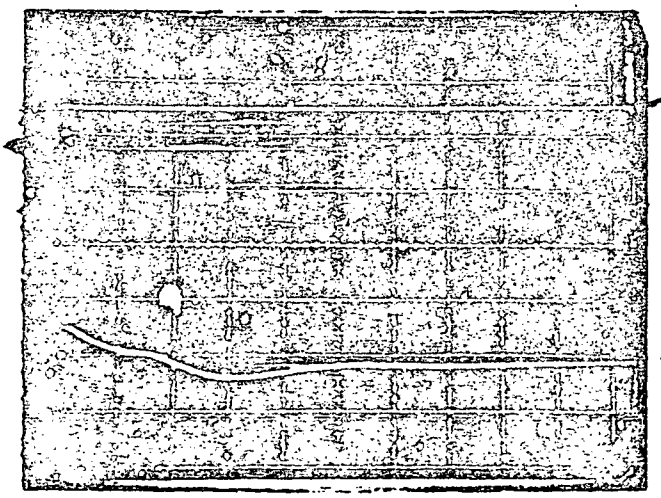


(2V) VOLTAGE/DIV:

(1A) CURRENT/DIV:

(500nS) SWEEP RATE:

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is disabled - PRIMARY SIDE



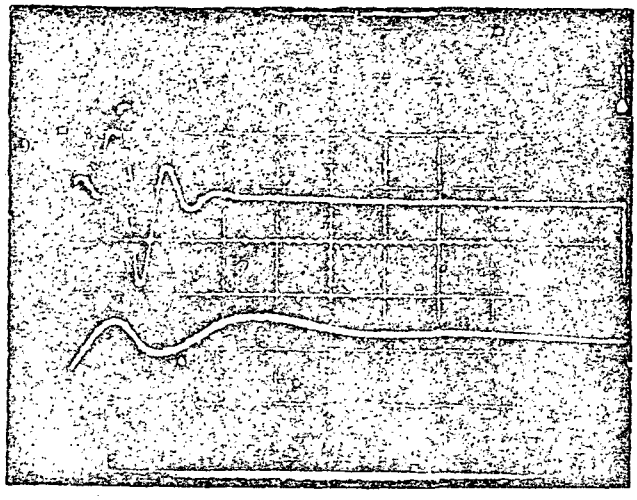
(5V) VOLTAGE/DIV:

(1A) CURRENT/DIV:

(1mS) SWEEP RATE:

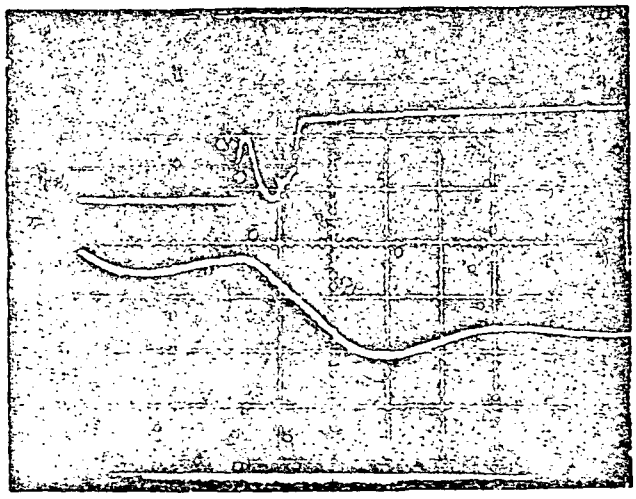
REF. PARA.	DESCRIPTION

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is enabled - REDUNDANT SIDE.



(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(500uS) SWEEP RATE: 500 μsec

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is disabled - REDUNDANT SIDE.



(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(1mS) SWEEP RATE: 500 μsec

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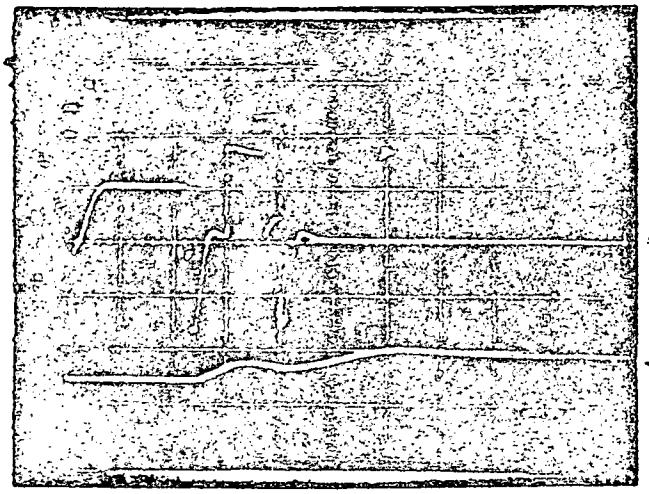
10.4 Performance test (continued)

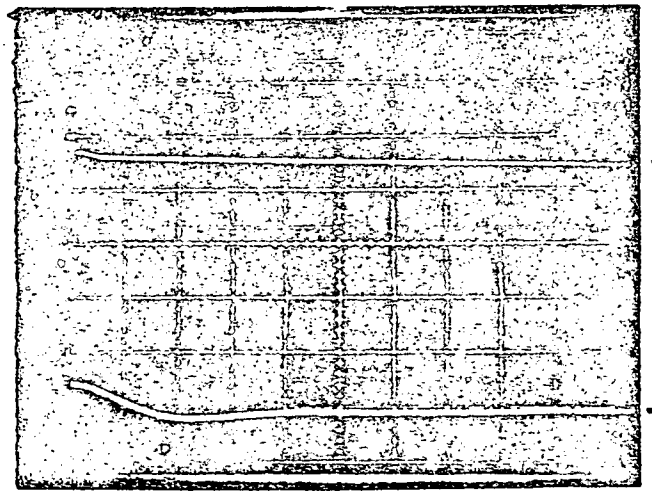
F. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.2.1	Input bus current w/o SMA +7V load	S26-1, S27-2 (S27-4 for RDT)		142.21mA	142.5

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is enabled - PRIMARY SIDE.

NO LOAD 9.284 Vdc
LOADED 7.526 Vdc



5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - PRIMARY SIDE.



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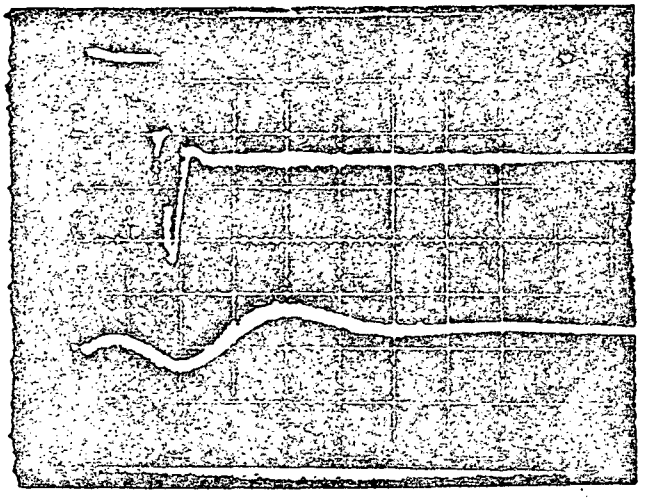
10.4 Performance test (continued)

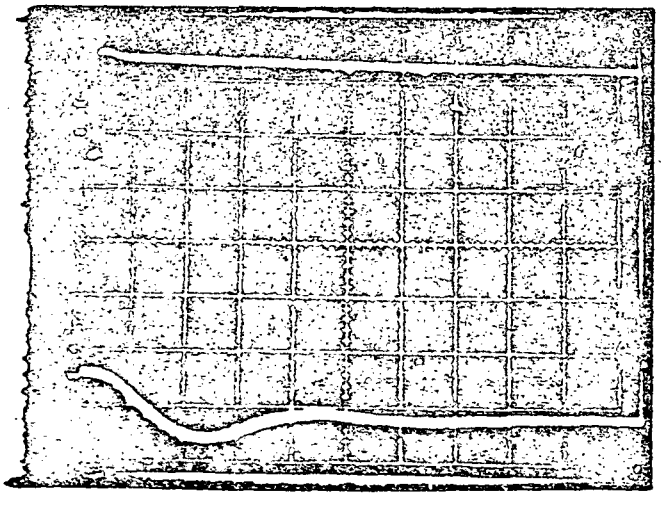
REF. PARA.	DESCRIPTION

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7 output voltage as SMA +7V is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(200uS) SWEEP RATE: 500 uSec

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2 V
(1A) CURRENT/DIV: 1A
(2mS) SWEEP RATE: 500 uSec

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10.4 Performance test (continued)

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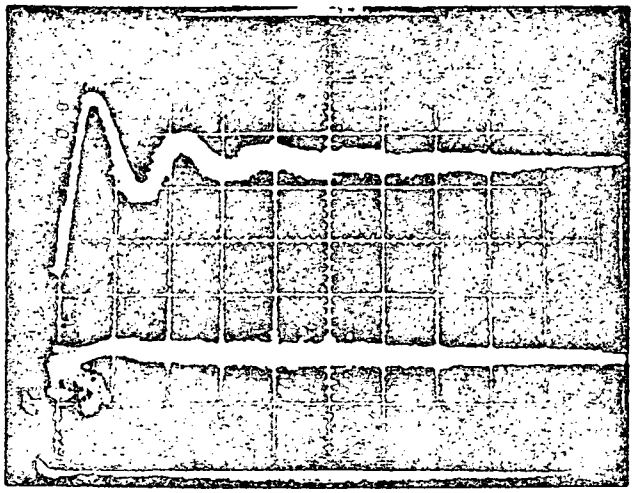
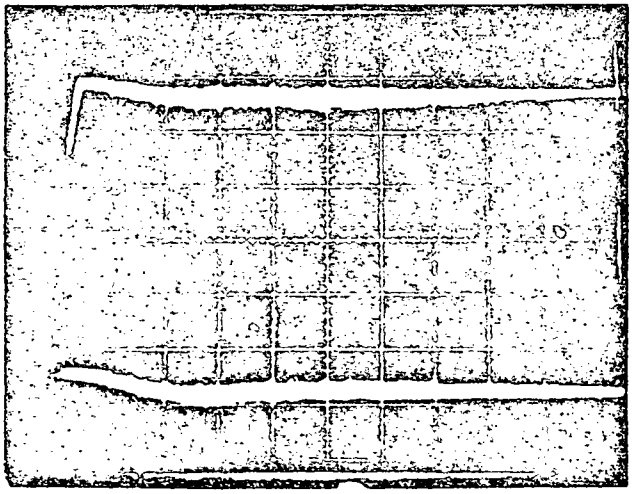
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	REDUNDA
5.10.8.2.3	Input bus current w/o SMA ±29V load	S26-1, S27-2 (S27-4 for RDT)			

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA +29V is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV:
(0.5V) CURRENT/DIV:
(1mS) SWEEP RATE:

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV:
(0.5A) CURRENT/DIV:
(1mS) SWEEP RATE:

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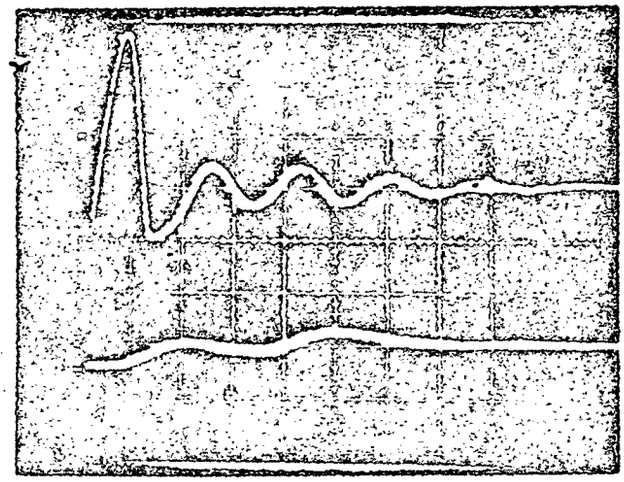
10.4 Performance test (continued)

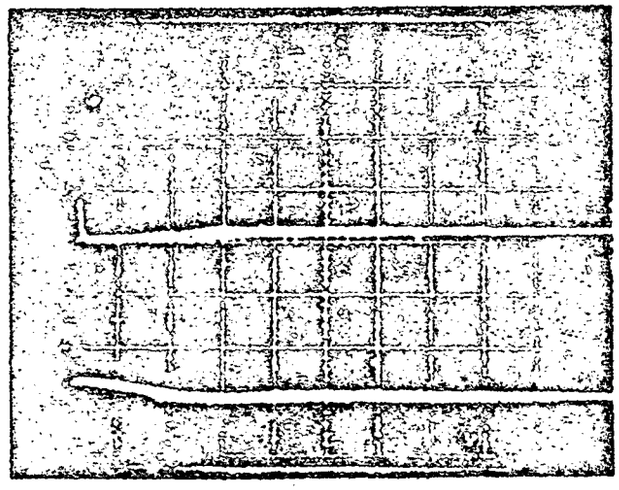
EF, PARA. DESCRIPTION

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 500 μsec

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as ±29V is disabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 500 μsec

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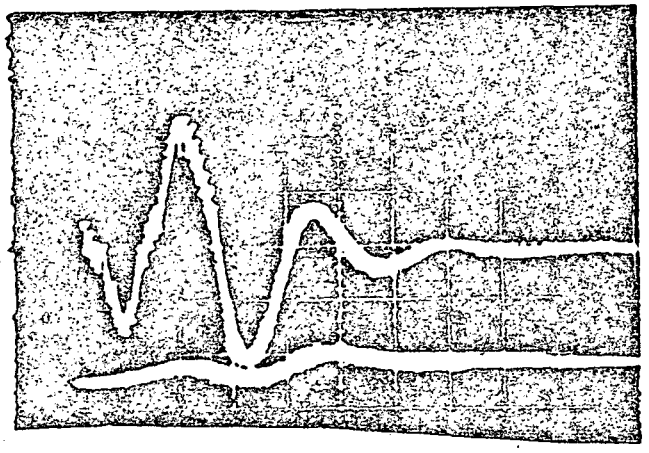
10.4 Performance test (continued)

EF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.3.1	Input bus current w/o CDVU load	S26-1, S27-2 (S27-4 for RDT)		148.29mV	154.11

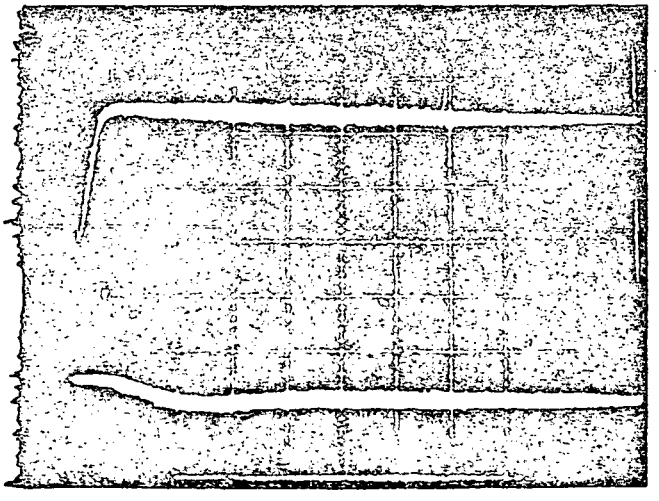
5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - PRIMARY SIDE

LOADED 7.503
UNLOADED 9.234



(2V) VOLTAGE/DIV: 10V/DIV.
(0.5A) CURRENT/DIV: 0.5A/DIV
(1mS) SWEEP RATE: 50μS/DIV.

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 10V/DIV
(0.5V) CURRENT/DIV: 0.5A/DIV.
(1mS) SWEEP RATE: 50μS/DIV.

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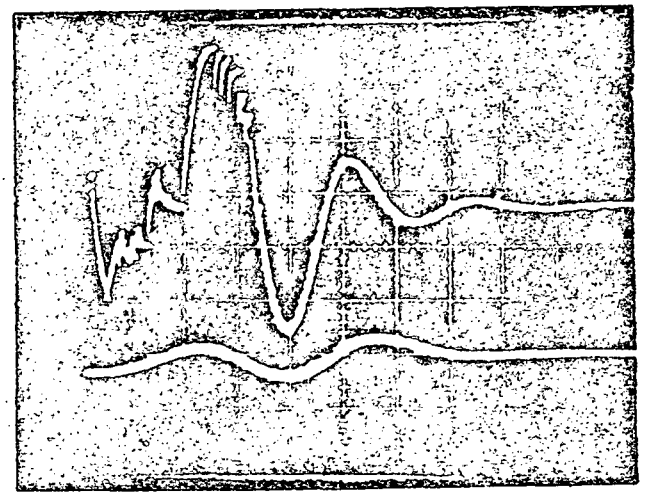
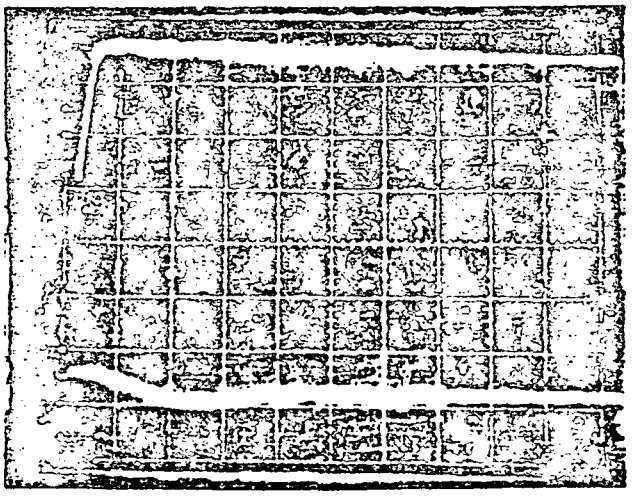
10.4 Performance test (continued)

SF. PARA.	DESCRIPTION
5.10.8.3.2	Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 500 μsec

5.10.8.3.2 Photograph as transients induced on input bus current and CDVU output voltage as CDVU is disabled - REDUNDANT SIDE

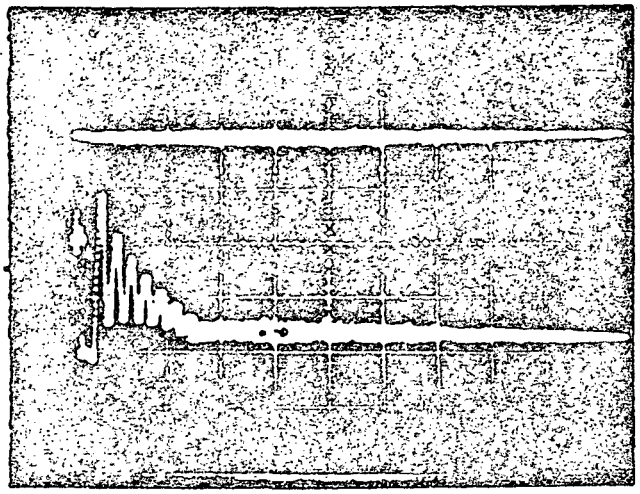


(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 500 μsec

10.4 Performance test (continued)

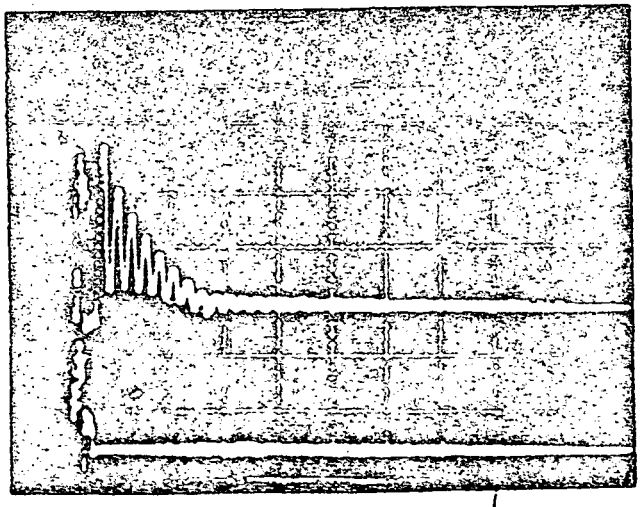
F. PARA.	DESCRIPTION

5.10.9.1 Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V/div.
(5A) CURRENT/DIV: 5A/div
(500uS) SWEEP RATE: 500uSec/div

Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(500uS) SWEEP RATE: 500usec

V_{BUS}

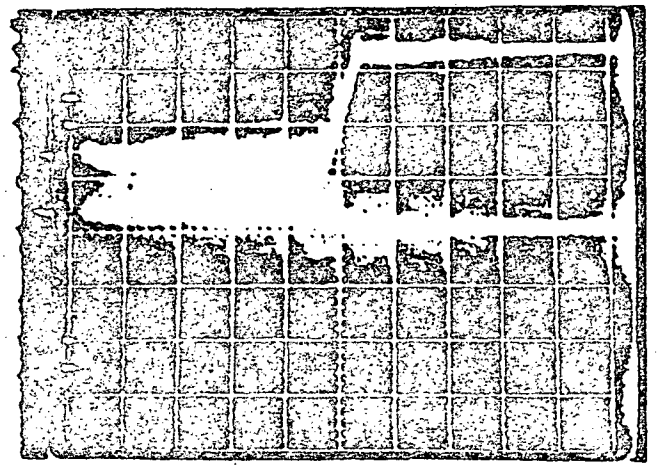
I_{BUS}

(20)

10.4 Performance test (continued)

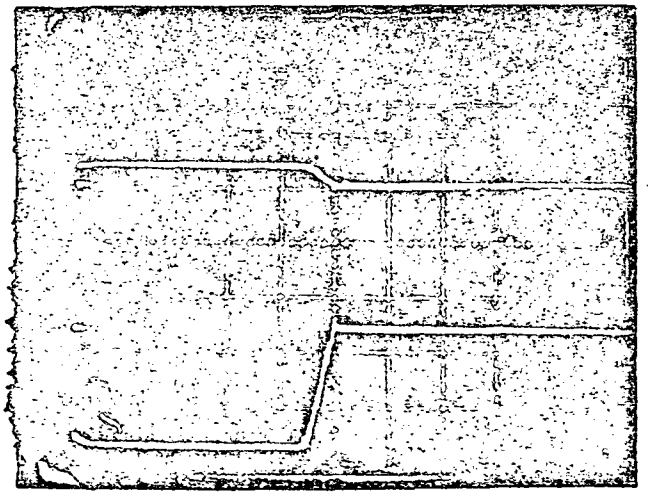
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDA
5.10.9.2	UUT stays off when bus is reapplied.	S1-ON (S2-ON for RDT)	--	✓	✓

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V/DIV.
(5A) CURRENT/DIV: 5A/DIV
(100mS) SWEEP RATE: 100mS/D

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - REDUNDANT SIDE



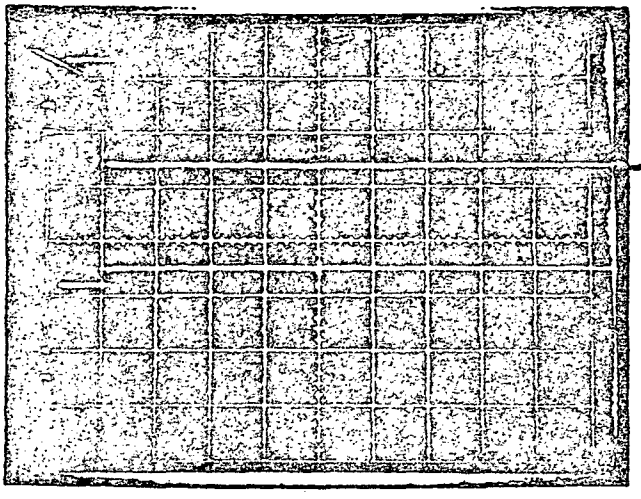
(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(100mS) SWEEP RATE: 100mSec

-oo-

10.4 Performance test (continued)

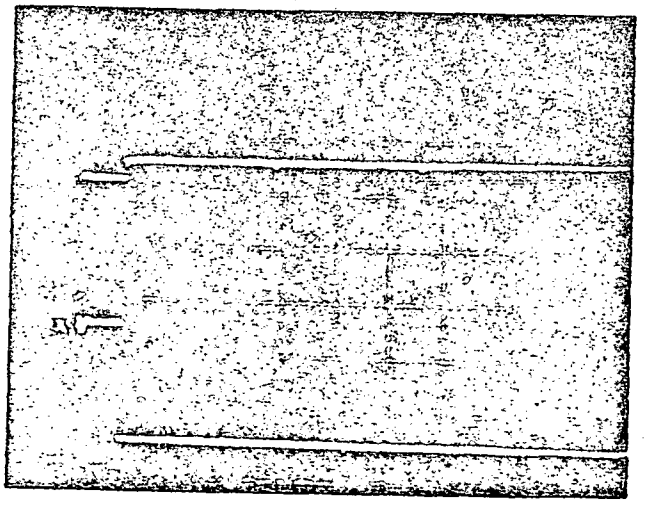
F. PARA.	DESCRIPTION

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V/DIV.
(5A) CURRENT/DIV: 5A/DIV.
(10mS) SWEEP RATE: 10mSec/DIV.

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(10mS) SWEEP RATE: 10 mSec

10.4 Performance test (continued)

FEB 03 1992

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	PRIMARY	REDUN
5.10.9.5	Record	S27-2 (S27-4)		152.13mV ✓	152
5.10.9.6	Record	(S27-4 (S27-2)		5.027mV	9.3
	Record	S27-2 (S27-4)		31.11mV	128.
5.10.9.7	Record that UUT turns on.	(Checkmark)		✓	✓
5.10.10.1	Input bus current AFTER it reads ~ 17A AND input bus voltage reads ~ 21V.	S26-1, S27-2 (S27-4 for RDT)		150.16mV	1.50
5.10.10.2	Input bus voltage with 17.0A load	S26-1, S27-1 (S27-3 for RDT)		23.04	23.
5.10.10.3	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		4.534	4.4
5.10.10.4	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.503	3.5
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.09	23.0
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		114.50mV	114
5.10.10.5	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.061	2.9
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.03	23.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		100.73mV	103.
5.10.10.6	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.497	2.5
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.01	23.0
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		85.57mV	89.2
5.10.10.7	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.062	2.0
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)	23.06	2.062 R. Edland 2-3-92	23.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		73.08mV	76.5

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDA
5.10.10.8	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.539	1.46
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.02	23.01
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		57.51 mV	59.24
5.10.10.9	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.0050	1.01
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.02	23.0
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		41.55	47.45
5.10.10.10	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		0.5417	.549
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.02	23.0
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		26.53 mV	30.7
5.10.10.11	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		0.231	.211
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.09	23.09
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		20.18 mV	22.21
5.10.10.12	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		19.72 mV	56.09
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		22.99	23.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		13.523 mV	13.87
5.10.11.1	Band 1+ output voltage	S26-1, S27-5		23.53	23.70
5.10.11.2	Band 1- output voltage	S27-6		-23.62	-23.44
5.10.11.3	2+	S27-7		23.78	23.25
5.10.11.4	2-	S27-8		-23.79	-23.49
5.10.11.5	3+	S27-9		24.12	23.50
5.10.11.6	3-	S27-10		-23.38	-23.27
5.10.11.7	Band 4+ output voltage	S26-1, S27-11		23.72	23.62

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	FEB 03 1982 LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDA
5.10.11.8	Band 4- output voltage	S26-1, S27-12		-23.56	-23.51
5.10.11.9	5,7+	S26-2, S27-1		22.97	23.68
5.10.11.10	5,7-	S27-2		-22.98	-23.0
5.10.11.11	6+	S27-3		22.86	22.9
5.10.11.12	Band 6-	S27-4		-23.09	-23.1
5.10.11.13	SMA Htr +	S27-5		24.86	25.0
5.10.11.14	Htr -	S27-6		-24.20	-24.9
5.10.11.15	+7V	S27-7		9.219	N/A
5.10.11	+7V	(S27-8 For RDT)		N/A	9.145
5.10.11	+29V	S27-9		31.14	N/A
5.10.11	+29V	(S27-11 For RDT)		N/A	31.47
5.10.11	-29V	S27-10		-31.36	N/A
	SMA -29V	S26-2, (S27-12 for RDT)		N/A	-31.37
5.10.11.18	Radiometer	S26-3, S27-2		9.659	9.69
5.10.11.19	CDVU	S27-3		9.159	9.22
5.10.11.20	Analog +	S27-4		25.08	25.7
5.10.11.21	Analog -	S27-5		-23.60	-23.7
5.10.11.22	Electromech.	S27-6		38.94	38.7
5.10.11.23	Outgas	S27-7		100.66	99.5
5.10.11.24	Parasitic	S27-9		31.19	N/A
	Parasitic output voltage	S26-3, (S27-10 for RDT)		N/A	31.64
5.10.11.25	Band 1+ TM output	S26-4, S28-5		4.287	4.32
5.10.11.26	1-	S28-6		4.288	4.25
5.10.11.27	2+	S28-7		4.321	4.33
5.10.11.28	2-	S28-8		4.303	4.24
5.10.11.29	3+	S28-9		4.322	4.27
5.10.11.30	3-	S28-10		4.256	4.231
5.10.11.31	4+	S28-11		4.299	4.281
5.10.11.32	4-	S26-4, S28-12		4.277	4.26
5.10.11.33	Band 5,7+ TM output	S26-5, S28-1		4.188	4.21

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.11.34	Band 5,7- TM output	S26-5, S28-2		4.167	4.182
5.10.11.35	6+	S28-3		4.129	4.160
5.10.11.36	Band 6-	S28-4		4.206	4.210
5.10.11.37	SMA Htr +	S28-5		4.651	4.669
5.10.11.38	Htr -	S28-6		4.40	4.507
5.10.11.39	+7V	S28-7 (S28-8 for RDT)		5.688	5.634
5.10.11.40	+29V	S28-9 (S28-13 for RDT)		4.247	4.318
5.10.11.41	SMA -29V	S26-5, S28-10 (S28-12 for RDT)		3.958	3.967
5.10.11.42	Radiometer	S26-6, S28-2		5.122	5.249
5.10.11.43	CDVU	S28-3		5.073	5.107
5.10.11.44	Analog +	S28-4		4.846	4.863
5.10.11.45	Analog -	S28-5		3.918	4.056
5.10.11.46	Electromech.	S28-6		4.758	4.735
5.10.11.47	Outgas - TM output	S26-6, S28-7		4.998	4.951
5.10.12.1	Bus voltage	S26-1, S27-1 (S27-3 for RDT)		22.96	23.06
5.10.12.2	Input bus current	S26-1, S27-2 (S27-4 for RDT)	50.49	3.558	50.45A
5.10.12.3	SMA Htr + output voltage	S26-2, S27-5		21.52	21.75
5.10.12.4	Htr + ripple	Seen on Scope	<250 mV pk-pk	80	25 mV
5.10.12.5	Htr - voltage	S26-2, S27-6		-22.03	-22.28
5.10.12.6	SMA Htr - ripple	Seen on Scope	<250 mV pk-pk	40	30
5.10.12.7	CDVU voltage	S26-3, S27-3		7.455	7.648
5.10.12.8	CDVU ripple	Seen on Scope	<250 mV pk-pk	40	40
5.10.12.9	Outgas - output voltage	S26-3, S27-7		26.53	26.28
5.10.12.10	Outgas - output ripple	Seen on Scope	2.50V pk-pk	180 mV	196
5.10.12.11	Parasitic output voltage	S26-3, S27-9 (S27-10 for RDT)		30.22	30.36
5.10.12.12	Parasitic output ripple	Seen on Scope	<500 mV pk-pk	90	96

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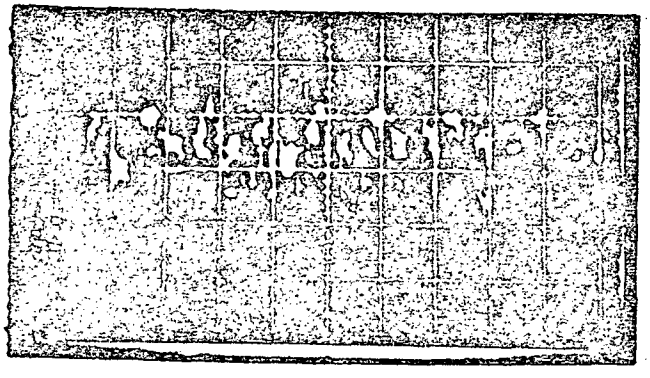
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.13.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		1.347	1.244
5.10.13.2	SMA Htr + output	S26-5, S28-5		3.929	3.980
5.10.13.3	SMA Htr -	S26-5, S28-6		3.922	4.092
5.10.13.4	CDVU	S26-6, S28-3		4.183	4.288
5.10.13.5	Outgas output telemetry	S26-6, S28-7		4.319	4.334

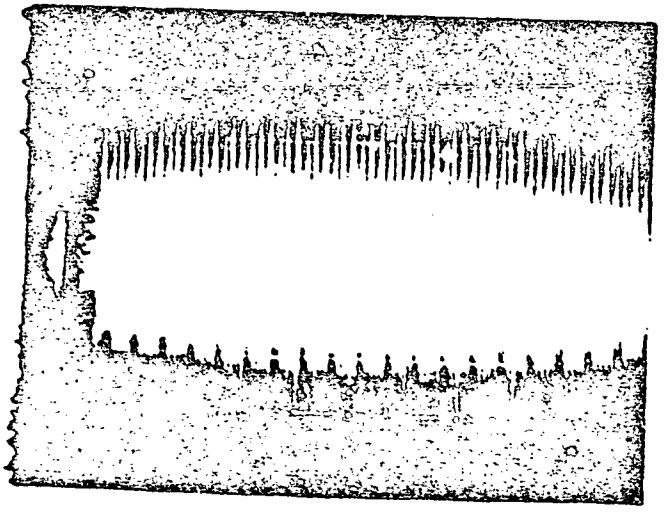
5.10.14.1 Photograph of reflected input current ripple in outgas mode – PRIMARY SIDE



(2mA) CURRENT/DIV: 2 mA.C.

(10mS) SWEEP RATE: 10 µS

5.10.14.1 Photograph of reflected input current ripple in outgas mode – REDUNDANT SIDE



(2mA) CURRENT/DIV: 2 mA A.C.

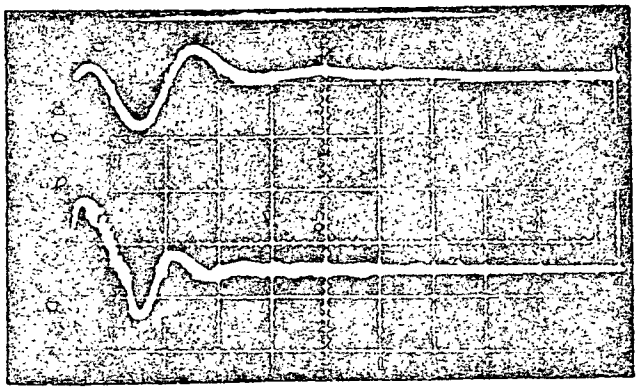
(10mS) SWEEP RATE: 10 µsec

10.4 Performance test (continued)

FEB 03 82

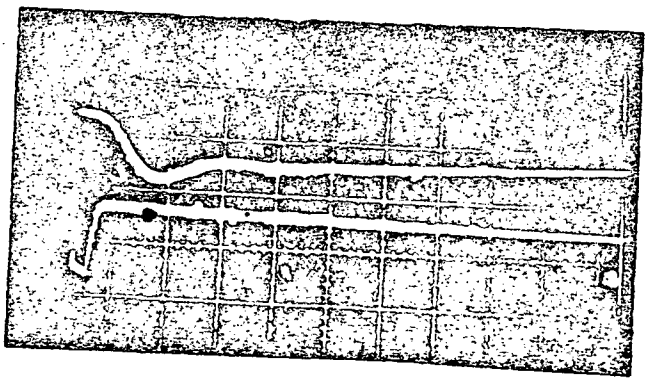
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.1.1	Input current with CDVU off.	S26-4 S27-2 (S27-4 for RDT)		4760	4746

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2 V
(200mA) CURRENT/DIV: 200 mA
(1mS) SWEEP RATE: 1 mS

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2 V
(200mA) CURRENT/DIV: 200 mA
(2mS) SWEEP RATE: 2 mS

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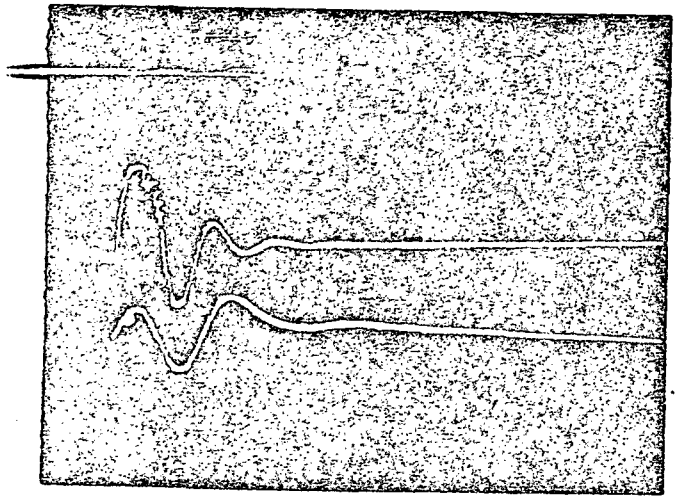
10.4 Performance test (continued)

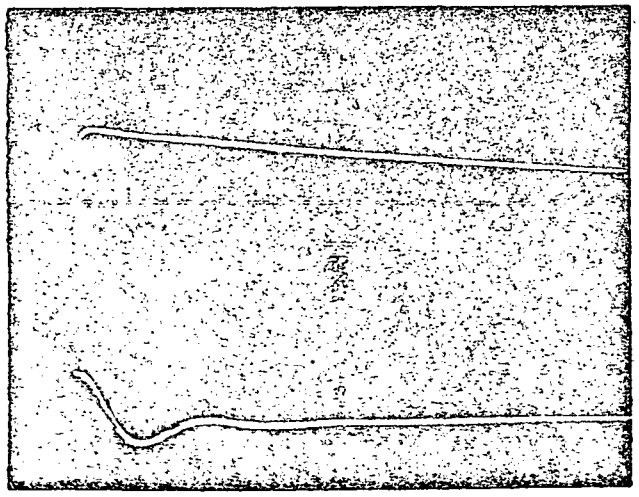
REF. PARA.	DESCRIPTION

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled — REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2 V
(200mA) CURRENT/DIV: 200 mA
(1mS) SWEEP RATE: 1 mS

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled — REDUNDANT SIDE



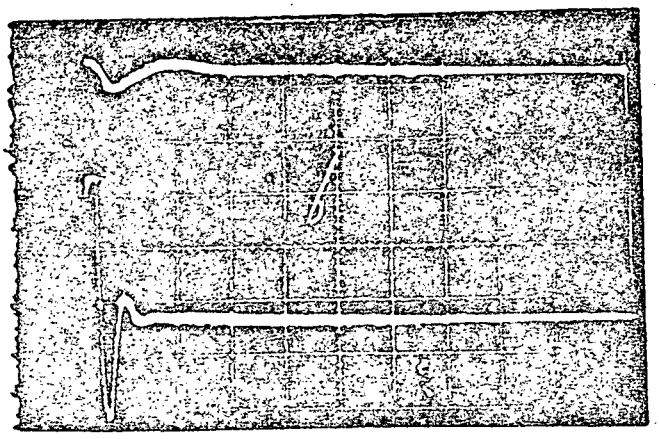
(2V) VOLTAGE/DIV: 2 V
(200mA) CURRENT/DIV: 200 mA
(2mS) SWEEP RATE: 1 mS

10.4 Performance test (continued)

FEB 03 1982

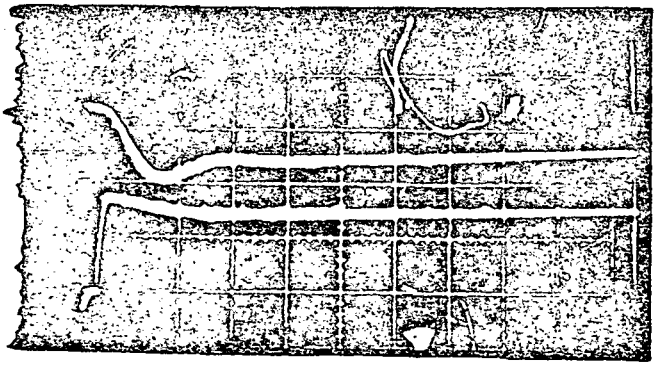
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.2.1	Input bus current with outgas disabled	S26-1, S27-2 (S27-4 for RDT)		17.37mV	17.61

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(2mS) SWEEP RATE: 1mS

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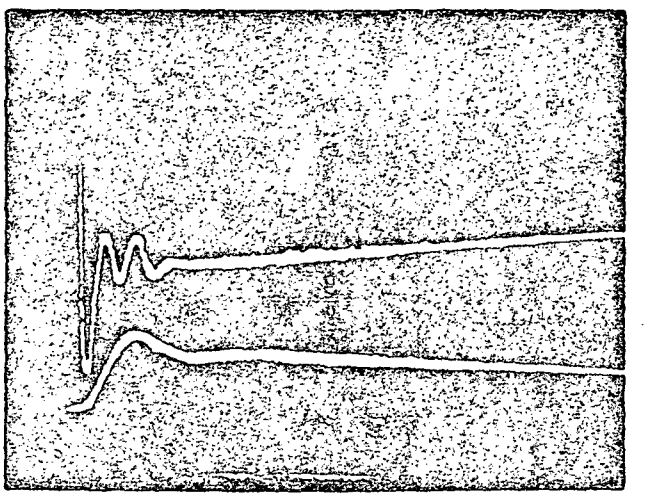
10.4 Performance test (continued)

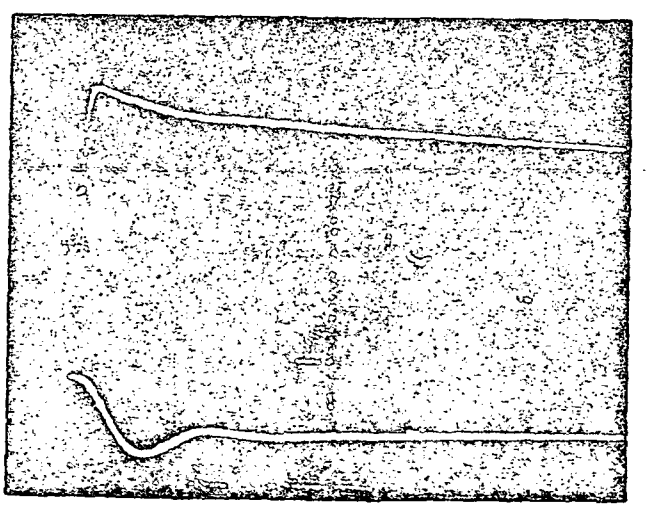
F. PARA.	DESCRIPTION

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - [illegible] SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(500uS) SWEEP RATE: 1mS

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

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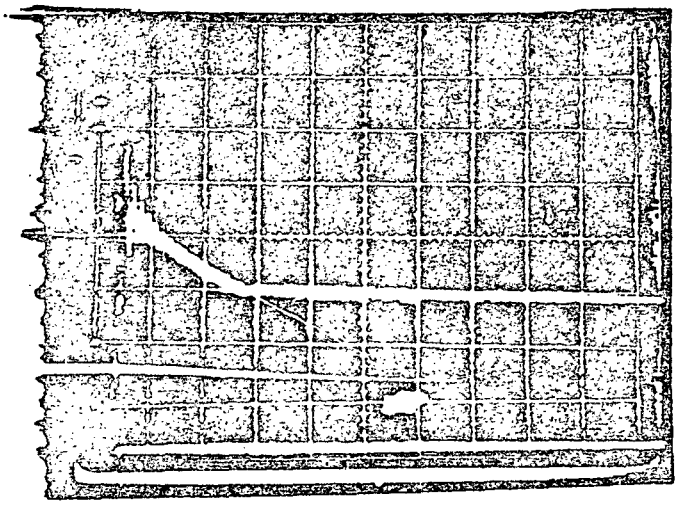
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITION	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.16.1	BPS voltage	S26-1, S27-1 (S27-3 for RDT)		28.01 (49)	28.01
5.10.16.2	BPS current	S26-1, S27-2 (S27-4 for RDT)		20.61 (52)	21.21
5.10.16.3	SMA Htr +output voltage	S26-2, S27-5		21.51 (13)	21.77
5.10.16.4	SMA Htr +load current	S26-8, S34-1		46.37 (38)	46.99
5.10.16.5	SMA Htr -output voltage	S26-2, S27-6		-21.87 (14)	-22.19
5.10.16.6	SMA Htr -load current	S26-8, S34-2		-8.63 (37)	-9.75
5.10.16.7	CDVU output voltage	S26-3, S27-3		7.44 (20)	7.63
5.10.16.8	CDVU load current	S26-8, S34-10		26.67 (45)	27.5
5.10.16.9	Parasitic output voltage	S26-3, S27-9 (S27-10)	30.41	[illegible] (21)	31.83
5.10.16.10	Parasitic load current	S26-8, S34-7		141.73 (46)	143.69
5.10.16.11	Input power (5.10.16.1 x 5.10.16.2)			47.194	48.804
5.10.16.12	Output power ((5.10.16.3 x 5.10.16.4) + (5.10.16.5 x 5.10.16.6) + (5.10.15.7 x 5.10.16.8) + (5.10.16.9 x 5.10.16.10))	(Primary) N/A		16.873	17.43
		(Redundant) N/A			
5.10.16.13	Efficiency ((5.10.16.12) ÷ (5.10.16.11)) x 100%			35.8%	35.7%

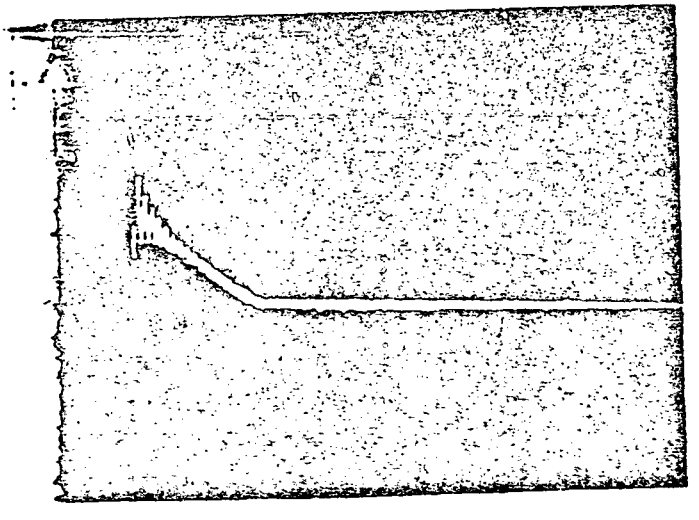
10.4 Performance test (continued)

5.10.17.1 Photograph of input bus current and input bus voltage as is disable - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE



5V) VOLTAGE/DIV: 5V
2A) CURRENT/DIV: 2A
1mS) SWEEP RATE: 1mS

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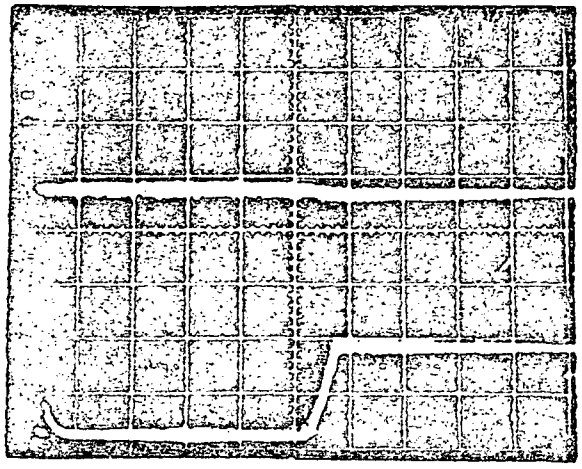
10.4 Performance test (continued)

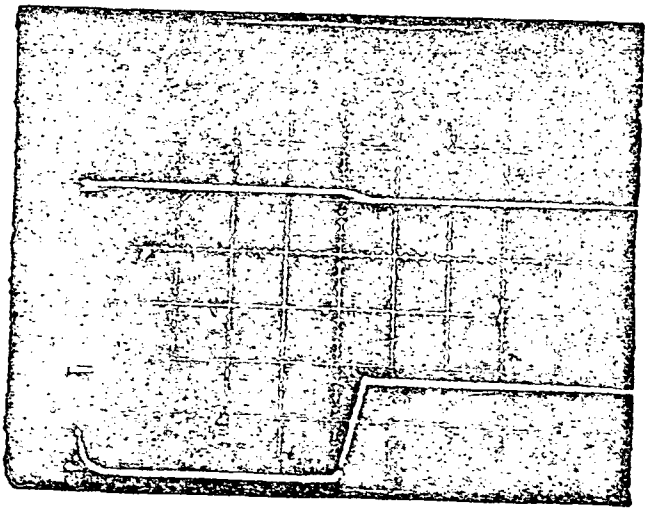
5.10.17.2 Unit stays off (check) ✓ Primary ✓ Redundant

5.10.17.3 Photograph of input bus current and input bus voltage as is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 5 V
(2A) CURRENT/DIV: 2 A
(100mS) SWEEP RATE: 100 mS

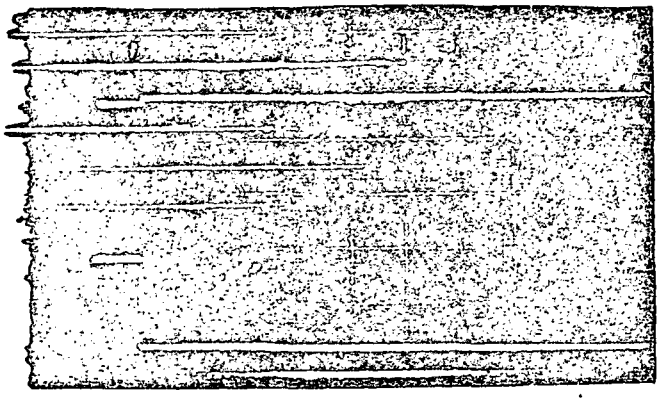
5.10.17.3 Photograph of input bus current and input bus voltage as as is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(100mS) SWEEP RATE: 100mS

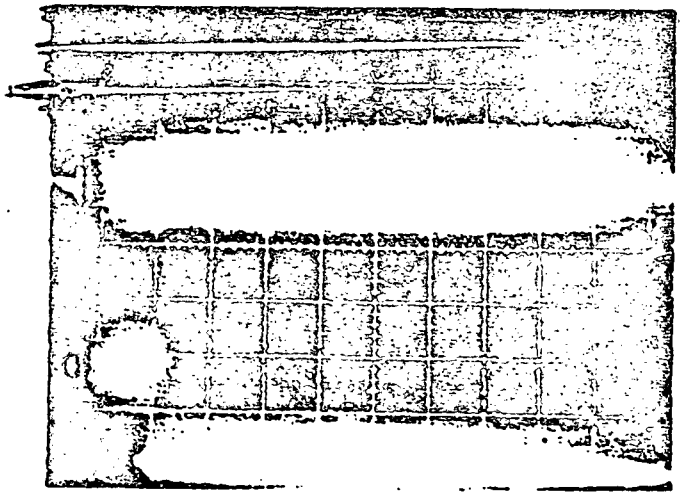
10.4 Performance test (continued)

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 10mS

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 10mS

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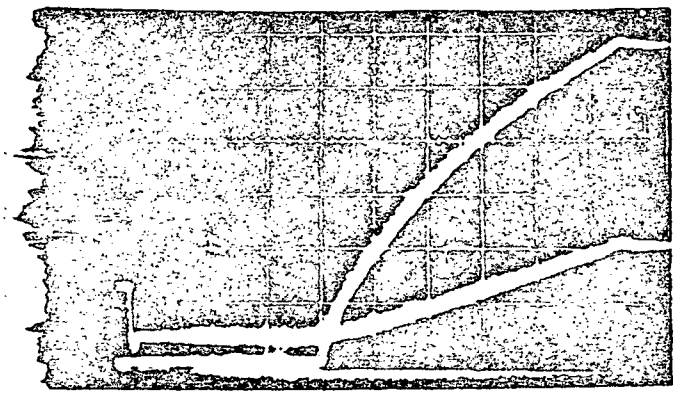
HAC TEST S32

10.4 Performance test (continued)

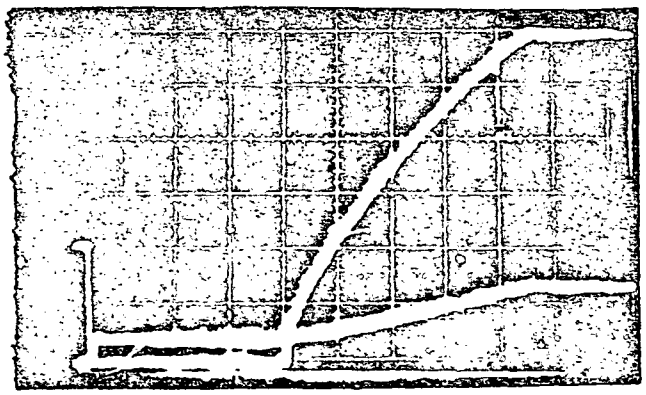
F. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.17.5	Record that UUT operates correctly.		(checkmark)	✓	✓
5.10.18.1	Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — PRIMARY SIDE				

(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 20MS



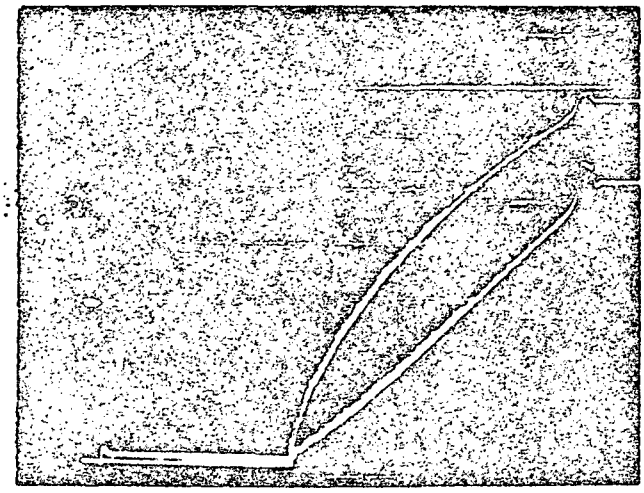
5.10.18.2 Photograph of input bus current and parasitic output voltage as parasitic enable command is issued (all loads are ON except outgas) — PRIMARY SIDE

(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 20MS



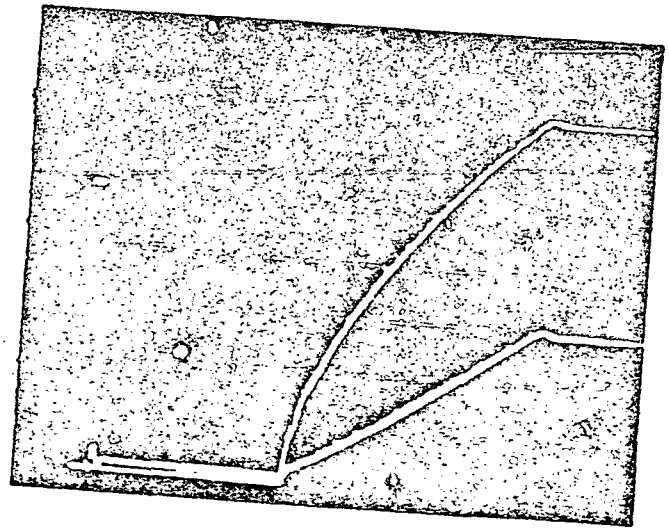
10.4 Performance test (continued)

.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 10 mS

5.10.18.2 Photograph of input bus current and MUX output voltage as parasitic enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5v) Volts/Div: 5V
(5A) Current/Div: 5A
(20mS) Sweep Rate: 10 mS

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HAC TEST S32

TS 16603
Rev B
~~September 1986~~
SCR 2 2-6-81

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	~~UUT~~ SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDAN
5.10.18.4	Undervoltage Trip Point (ON/OFF)	S26-1, S27-1 (S27-3 for RDT)	18.0 ±1.50V	18.09	18.0
5.10.18.5	UUT stays OFF			~~47~~ 48 ✓	✓
5.10.18.6	Undervoltage Trip Point (OFF/ON)	S26-1, S27-1 (S27-3 for RDT)	19.0 ±1.50V	19.08	18.8
5.10.18.7	Overvoltage Trip Point	S26-1, S27-1 (S27-3 for RDT)	38.0 ± 2V	38.09	38.0
5.10.18.8	UUT stays OFF			✓	✓
5.10.18.9	UUT turns ON			✓	✓

ORIGINAL PAGE IS
OF POOR QUALITY

2/3/82
DATE

EVANS/Bowison
TESTER(S)

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10.4 Performance test - Long Form

PROTOFLIGHT DNA, OR FLIGHT ✓, S/N 004 TEMPERATURE: +32°F

IN-PROCESS DNA, QUAL DNA, OR ACCEPTANCE ✓

TESTING PHASE Final Cold Long Form LINE VOLTAGE: 28.0 VOLTS

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.1.1	Calibrate cmd gen	--	--	✓	✓
5.10.2.1	Input bus current	S26-1, S27-2 (S27-4 for redundant)		234mA	23.1mA
5.10.2.2	MUX output voltage	S26-3, S27-1	30.0 ±0.90V	29.84V	30.09
5.10.2.3	MUX load current	S26-3, S27-12	3.55 ±0.40A	3.234A	32.76mA

The rest of Section 5.10.2 requires only checking voltage - indicate by checkmarks.

5.10.2.4.1	B1 + output voltage	S26-1, S27-5	✓	✓
5.10.2.4.2	B1 -	S27-6	✓	✓
5.10.2.4.3	B1 -	S27-5	✓	✓
5.10.2.4.4	B1 +	S27-7	✓	✓
5.10.2.5.1	B2 +	S27-7	✓	✓
5.10.2.5.2	B2 -	S27-8	✓	✓
5.10.2.5.3	B2 -	S27-8	✓	✓
5.10.2.5.4	B2 +	S27-7	✓	✓
5.10.2.6.1	B3 +	S27-9	✓	✓
5.10.2.6.2	B3 -	S27-10	✓	✓
5.10.2.6.3	B3 -	S27-10	✓	✓
5.10.2.6.4	B3 +	S27-9	✓	✓
5.10.2.7.1	B4 +	S27-11	✓	✓
5.10.2.7.2	B4 -	S27-12	✓	✓
5.10.2.7.3	B4 -	S27-12	✓	✓
5.10.2.7.4	B4 +	S26-1, S27-11	✓	✓
5.10.2.8.1	B5,7+	S26-2, S27-1	✓	✓
5.10.2.8.2	B5,7-	S27-2	✓	✓
5.10.2.8.3	B5,7-	S27-2	✓	✓
5.10.2.8.4	B5,7+	S27-1	✓	✓
5.10.2.9.1	B6 +	S27-3	✓	✓
5.10.2.9.2	B6 - output voltage	S26-2, S27-4	✓	✓

SEE VIEWGRAPHS PAGES 3 THRU 2

10.4 Performance test (continued)

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REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.2.9.3	B6 - output voltage	S26-2, S27-4		✓	✓
5.10.2.9.4	B6 + output voltage	S26-2, S27-3		✓	✓
5.10.2.10.1	SMA HTR + output voltage	S27-5		✓	✓
5.10.2.10.2	-	S27-6		✓	✓
5.10.2.10.3	-	S27-6		✓	✓
5.10.2.10.4	-	S27-5		✓	✓
5.10.2.11.1	-7V	S26-2, S27-7		✓	
5.10.2.11.2	-7V	(S27-8 for RDT)			✓
5.10.2.12.1	+29V	S26-2, S27-9		✓	
		(S27-11 for RDT)			✓
5.10.2.12.2	-29V	S26-2, S27-10		✓	
		(S27-12 for RDT)			✓
5.10.2.12.3	-29V	S26-2, S27-10		✓	✓
5.10.2.12.4	SMA HTR +29V	S26-2, S27-9		✓	✓
5.10.2.13.1	Radiometer	S26-3, S27-2		✓	✓
5.10.2.13.2	Radiometer	S27-2		✓	✓
5.10.2.14.1	CDVU	S27-3		✓	✓
5.10.2.14.2	CDVU	S27-3		✓	✓
5.10.2.15.1	Analog +	S27-4		✓	✓
5.10.2.15.2	Analog -	S27-5		✓	✓
5.10.2.15.3	Analog -	S27-5		✓	✓
5.10.2.15.4	Analog +	S27-4		✓	✓
5.10.2.16.1	Electromech.	S27-6		✓	✓
5.10.2.16.2	Electromech.	S27-6		✓	✓
5.10.2.17.1	Outgas output voltage	S26-3, S27-7		✓	✓
5.10.3.1	Bus voltage	S26-1, S27-1			
		(S27-3 for RDT)		28.00V (49)	28.01
5.10.3.2	MUX load current	S26-3, S27-12	4.130 ±0.025A	4.139A	41.32
5.10.3.3	Bus current	S26-1, S27-2			
		(S27-4 for RDT)		4.70A (50)	131.08
5.10.3.3.2	BPS Voltage	S26-1, S27-1 S27-3)		28.00V	28.00
5.10.3.3.3	BPS Current	S26-1, S27-2 (S27-4)		4.923A	131.41
5.10.3.3.4	MUX Current	S26-3, S27-12		4.131A	41.35

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	BYM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.3.4.1	B1 + output voltage	S26-1, S27-5	20.50 ±2.50V	+20.44 (1)	+20.48
5.10.3.4.2	B1 + output ripple	Look on Scope	<600 mV pk-pk	20	20
5.10.3.4.3	B1 - output voltage	S26-1, S27-6	-20.50 ±2.50V	-20.52 (2)	-20.49
5.10.3.4.4	B1 - output ripple	Look on Scope	<600 mV pk-pk	20	20
5.10.3.5.1	B2 + output voltage	S26-1, S27-7	20.50 ±2.50V	+20.56 (3)	20.55
5.10.3.5.2	B2 + output ripple	Look on Scope	<600 mV pk-pk	20	20
5.10.3.5.3	B2 - output voltage	S26-1, S27-8	-20.50 ±2.50V	-20.48 (4)	-20.57
5.10.3.5.4	B2 - output ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.6.1	B3 + output voltage	S26-1, S27-9	20.50 ±2.50V	+20.43 (5)	20.50
5.10.3.6.2	B3 + output ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.6.3	B3 - output voltage	S26-1, S27-10	-20.50 ±2.50V	-20.39 (6)	-20.57
5.10.3.6.4	B3 - output ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.7.1	B4 + output voltage	S26-1, S27-11	20.50 ±2.50V	+20.48 (7)	20.67
5.10.3.7.2	B4 + output ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.7.3	B4 - output voltage	S26-1, S27-12	-20.50 ±2.50V	-20.50 (8)	-20.69
5.10.3.7.4	B4 - output ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.8.1	B5,7 + voltage	S26-2, S27-1	20.50 ±2.50V	+20.26 (9)	20.20
5.10.3.8.2	B5,7 + ripple	Seen on Scope	<600 mV pk-pk	20	40
5.10.3.8.3	B5,7 - voltage	S26-3, S27-2	-20.50 ±2.50V	-20.20 (10)	-20.23
5.10.3.8.4	B5,7 - ripple	Seen on Scope	<600 mV pk-pk	30	40
5.10.3.9.1	B6 + voltage	S26-2, S27-3	20.50 ±2.50V	+20.39 (11)	20.54
5.10.3.9.2	B6 + ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.9.3	B6 - voltage	S26-2, S27-4	-20.50 ±2.50V	-20.48 (12)	20.57
5.10.3.9.4	B6 - ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.10.1	SMA Htr + voltage	S26-2, S27-5	21.20 ±2.12V	+21.27 (13)	21.46
5.10.3.10.2	SMA Htr + ripple	Seen on Scope	<630 mV pk-pk	20	20
5.10.3.10.3	SMA Htr - voltage	S26-2, S27-6	-21.20 ±2.12V	-22.74 (14)	-22.95
5.10.3.10.4	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	20	20
5.10.3.11.1	SMA +7V voltage	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.30V	7.27 (15)	7.218
5.10.3.11.2	SMA +7V output ripple	Seen on Scope	<10 mV pk-pk	30	40

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	TEST DEVICE CONNECTIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.3.12.1	SMA +29V output voltage	S26-2, S27-9 (S27-11 for RDT)	29.50 ±1.50V	30.43 (16)	30.69
5.10.3.12.2	SMA +29V ripple	Scope	<870 mV, pk-pk	40	50
5.10.3.12.3	SMA -29V voltage	S26-2, S27-10 (S27-12 for RDT)	-29.50 ±1.50V	-30.42 (17)	-30.70
5.10.3.12.4	SMA -29V ripple	Scope	<870 mV pk-pk	40	50
5.10.3.13.1	MUX voltage	S26-3, S27-1	30.00 ±0.90V	30.20 (18)	30.40
5.10.3.13.2	MUX ripple	Scope	<900 mV, pk-pk	60	70
5.10.3.14.1	Radiometer voltage	S26-3, S27-2	8.50 ±0.85V	8.465 (19)	8.481
5.10.3.14.2	Radiometer ripple	Scope	<250 mV pk-pk	30	30
5.10.3.15.1	CDVU voltage	S26-3, S27-3	8.00 ±0.80V	7.468 (20)	7.464
5.10.3.15.2	CDVU ripple	Scope	<240 mV pk-pk	20	30
5.10.3.16.1	Analog + voltage	S26-3, S27-4	21.20 ±2.12V	22.26 (21)	22.61
5.10.3.16.2	Analog + ripple	Scope	<630 mV pk-pk	30	30
10.3.16.3	Analog - voltage	S26-3, S27-5	-21.20 ±2.12V	-22.43 (22)	-22.58
.0.3.16.4	Analog - ripple	Scope	<630 mV pk-pk	30	30
5.10.3.17.1	Electromech. voltage	S26-3, S27-6	33.40 ±3.34V	33.08 (23)	33.43
5.10.3.17.2	Electromech. ripple	Scope	<1.0V pk-pk	30	40
5.10.3.18.1	Oxygen voltage	S26-3, S27-7	100.0 ±12.0V	103.48	102.13
5.10.3.18.2	Oxygen output ripple	Scope	<3.0V pk-pk	140 mV	190 mV
5.10.4.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		3.749	3.770
5.10.4.2.1	Band 1 + volt. telemetry	S26-4, S28-5		3.747	3.783
5.10.4.2.2	Band 1 -	S28-6		3.735	3.766
5.10.4.3.1	Band 2+	S28-7		3.707	3.750
5.10.4.3.2	Band 2-	S28-8		3.698	3.728
5.10.4.4.1	Band 3+	S28-9		3.718	3.732
5.10.4.4.2	Band 3-	S28-10		3.726	3.753
5.10.4.5.1	Band 4+	S28-11		3.721	3.759
5.10.4.5.2	Band 4-	S26-4, S28-12		3.732	3.766
5.10.4.6.1	Band 5,7+	S26-5, S28-1		3.684	3.699
5.10.4.6.2	Band 5,7- volt. telemetry	S26-5, S28-2		3.683	3.689

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.4.7.1	Band 6 + volt. telemtry	S26-5, S28-3		3.691	3.724
5.10.4.7.2	Band 6 -	S28-4		3.725	3.756
5.10.4.8.1	SMA Htr +	S28-5		4.068	4.112
5.10.4.8.2	SMA Htr -	S28-6		4.126	4.160
5.10.4.9	SMA +7V	S26-5, S27-7 (S27-8 for RDT)		4.980	4.987
5.10.4.10.1	SMA +29V	S26-5, S28-9 (S27-11 for RDT)		4.173	4.235
5.10.4.10.2	SMA -29V	S26-5, S28-10 (S27-12 for RDT)		3.770	3.833
5.10.4.11	MUX	S26-6, S28-1		4.294	4.309
5.10.4.12	Radiometer	S26-6, S28-2		4.638	4.650
5.10.4.13	CDVU	S26-6, S28-3		4.286	4.299
5.10.4.14.1	Analog + volt. telemtry	S26-6, S28-4		3.987	4.029
5.10.4.14.2	Analog -	S26-6, S28-5		3.939	3.967
.10.4.15	Electromech.	S28-6		4.061	4.104
5.10.4.16	Outgas volt. telemetry	S26-6, S28-7		5.175	5.105
5.10.5.1.1	Analog + load current	S26-3, S27-11 mV ÷ 10 = Amps		15.645 (24)	15.721
5.10.5.1.2	MUX	S26-3, S27-12 mV ÷ 10 = Amps		41.37 (25)	41.33
5.10.5.1.3	Band 1 +	S26-7, S34-1 mV ÷ 0.5 = mA		91.24 (26)	91.33
5.10.5.1.4	Band 1 -	S34-2		91.42 (27)	91.49
5.10.5.1.5	2 +	S34-3		90.39 (28)	91.39
5.10.5.1.6	2 -	S34-4		91.22 (29)	91.99
5.10.5.1.7	3 +	S34-5		91.09 (30)	91.93
5.10.5.1.8	3 -	S34-6		90.91 (31)	91.93
5.10.5.1.9	4 +	S34-7		91.13 (32)	91.93
5.10.5.1.10	4 -	S34-8		90.80 (33)	91.93
5.10.5.1.11	5,7 +	S34-9		90.90 (34)	90.87
5.10.5.1.12	5,7 -	S34-10		90.09 (35)	90.19
5.10.5.1.13	6 +	S34-11		47.41 (36)	47.76
5.10.5.1.14	Band 6 -	S26-7, S34-12		47.25 (37)	47.64
5.10.5.1.15	SMA Htr +	S26-8, S34-1 mV ÷ 0.5 = mA		48.00 (38)	48.42
5.10.5.1.16	SMA Htr - load current	S26-8, S34-2 mV = mA		8.983 (39)	9.060

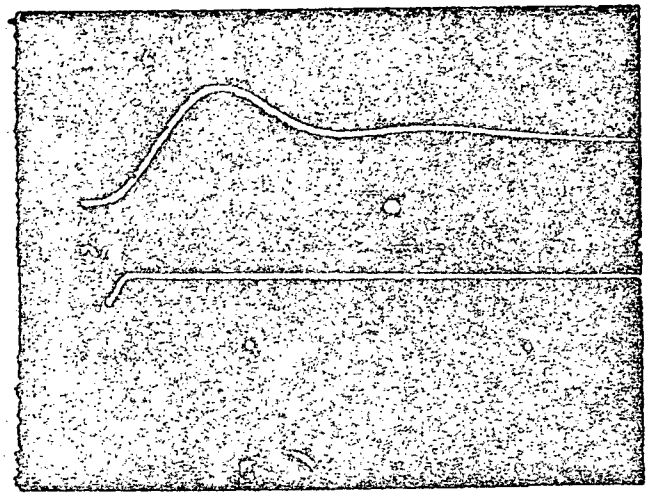
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.5.1.17	SMA +29V load current	S26-8, S34-3	mV ÷ 0.402 = mA	50.72(40)	51.15
5.10.5.1.18	SMA -29V	S34-4	mV ÷ 0.402 = mA	50.47(41)	50.86
5.10.5.1.19	SMA +7V	S34-5	V ÷ 0.1 = Amps	287.3(42)	286.2
5.10.5.1.20	Analog -	S34-6	mV ÷ 0.402 = mA	268.9(43)	270.2
5.10.5.1.21	Radiometer	S34-9	mV ÷ 0.5 = mA	156.58(44)	157.95
5.10.5.1.22	CDVU	S34-10	mV ÷ 0.5 = mA	269.2(45)	274.4
5.10.5.1.23	Electromech. load current	S26-8, S34-11	mV ÷ 0.402 = mA	216.5(46)	212.6
5.10.5.2.1	Bus power supply voltage	S26-1, S27-1 (S27-3 for RDT)		28.08(47)	28.01
5.10.5.2.2	Bus input current	S26-1, S27-2 (S27-4 for RDT)	mV ÷ 10 = Amps	129.53(48)	131.14
5.10.5.2.3	P_{IN} (Section 5.10.5)			362.684	367.38
5.10.5.2.4	P_{IN} (Section 5.10.3)			362.964	367.15[3]
5.10.5.2.5	P_{IN} (avg)			362.824	367.24[3]
5.10.5.2.9	Input current at current limit	26-1, 27-2 (26-1 27-4 Rdt)		151.41	149.98
	Input voltage at current limit	27-1 (27-3 Rdt)		27.75	27.61
	MUX voltage at current limit	26-3, 27-1		30.29	30.47
	MUX current at current limit	27-12		52.16	52.21
5.10.5.3.1	P_{OUT}			271.866	274.21[2]
5.10.5.3.2	Efficiency		≥70%	75.43	75.31

10.4 Performance test (continued)

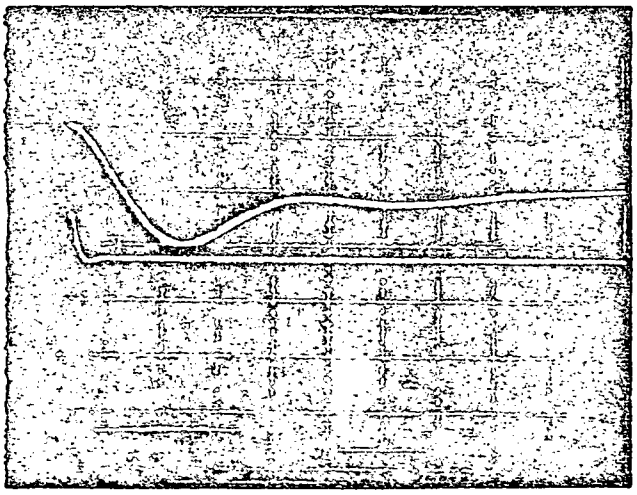
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.6.1	+7V output pulsed	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	7.031	7.161

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-PRIMARY SIDE



(0.2A) CURRENT/DIV: .2A A.C.
(1V) VOLTAGE/DIV: 2V
(200uS) SWEEP RATE: ~~200 uSec~~ 500 uSec

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load on SMA +7V outputs is being removed - PRIMARY SIDE

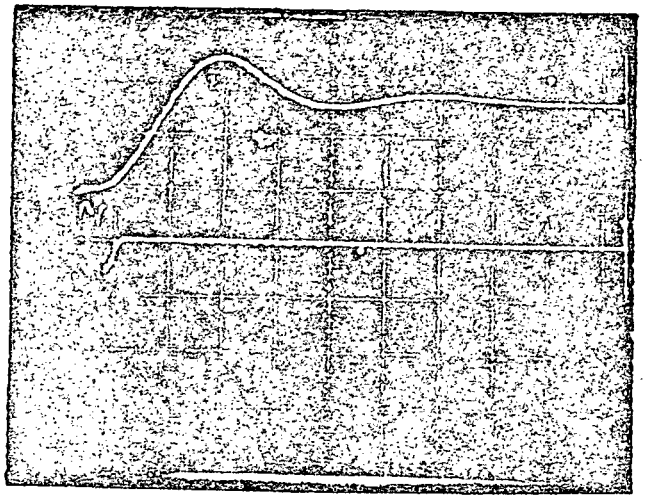


(0.2A) CURRENT/DIV: .2A A.C.
(1V) VOLTAGE/DIV: 2V
(200uS) SWEEP RATE: 500 uSec

10.4 Performance test (continued)

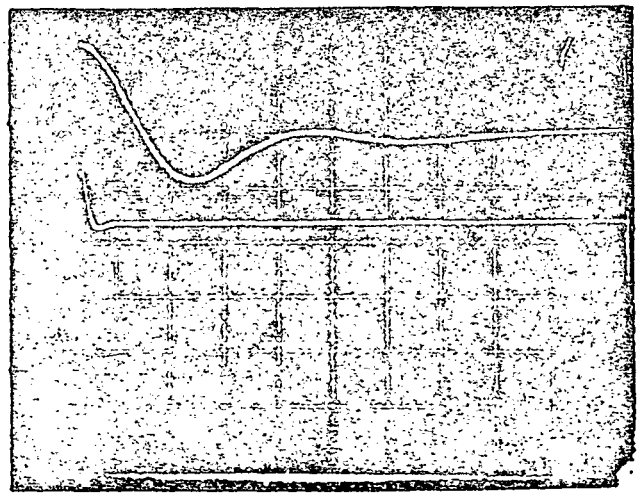
REF. PARA. DESCRIPTION

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-REDUNDANT SIDE



(0.2A) CURRENT/DIV: .2A A.C.
(1V) VOLTAGE/DIV: 2V
(200uS) SWEEP RATE: 500μsec

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load is being removed-REDUNDANT SIDE



(0.2A) CURRENT/DIV: .2A A.C.
(1V) VOLTAGE/DIV: 2V
(200uS) SWEEP RATE: 500μsec

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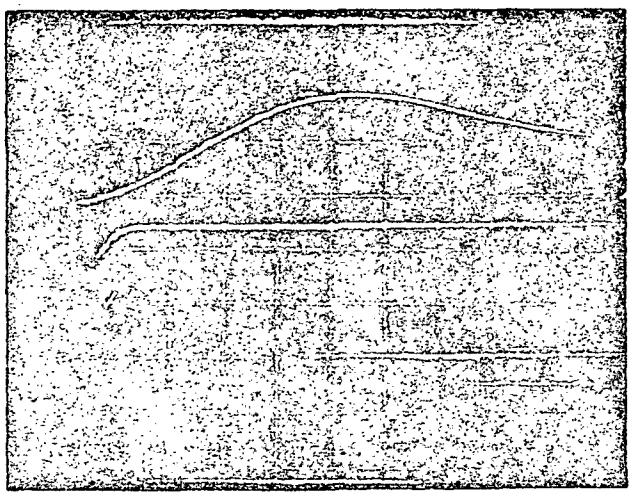
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	BVH SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.6.3	Input bus current	S26-1, S27-2 (S27-4 for BDT)		134.4	136.6
5.10.6.4	SMA +7V TM- pulsed	S26-5, S28-7 (S28-8 for BDT)		465.9	467.1
5.10.6.5	SMA +7V load current-pulsed	(S26-8, S34-5		470.6	477.7

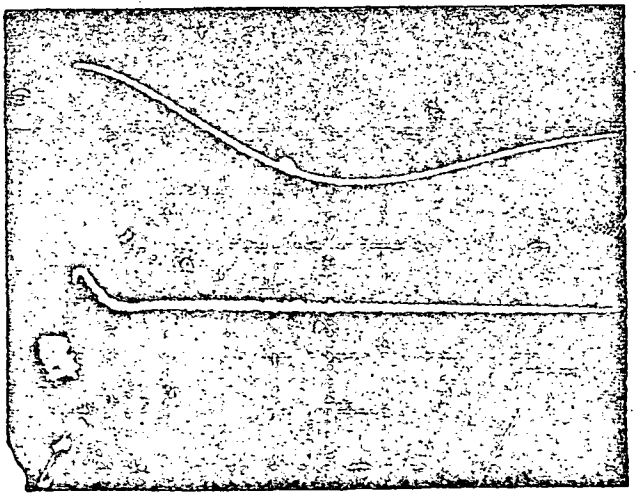
5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as SMA +7V output is being pulse-loaded-PRIMARY SIDE



(1A)* SMA CURRENT/DIV: .1V
(1A) BUS CURRENT/DIV: 200 mA
(200uS) SWEEP RATE: 200 μsec

*Using 0.1 Ω shunt and 100 mV/Div on scope

5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as pulse-load is being removed-PRIMARY SIDE

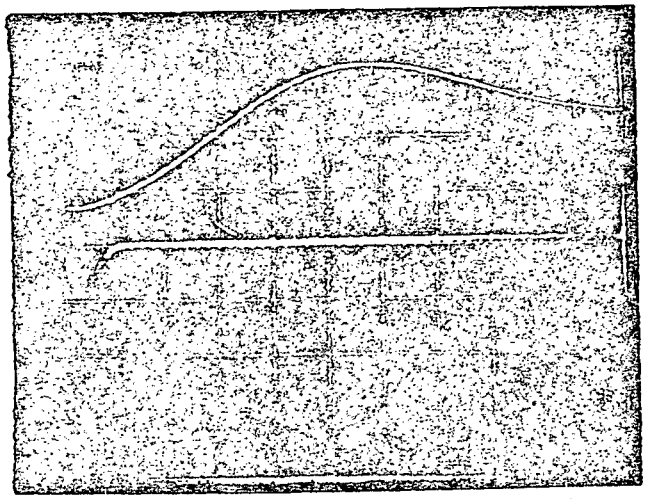


(1A)* SMA CURRENT/DIV: .1V
(1A) BUS CURRENT/DIV: 200 mA
(200uS) SWEEP RATE: 200 μsec

*Using 0.1 Ω shunt and 100mV/Div on Scope

10.4 Performance test (continued)

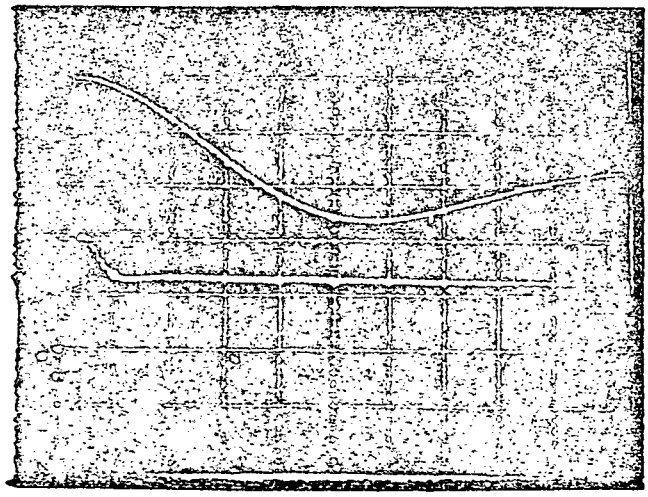
REF. PARA.	DESCRIPTION
5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as SMA + 7V output is being pulse loaded - REDUNDANT SIDE



(1A)* SMA CURRENT/DIV: .1V
(2A) BUS CURRENT/DIV: 200 mA
(200uS) SWEEP RATE: 200 μsec

*Using 0.1Ω shunt and 100 mV/Div on scope.

5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as pulse-load is removed - REDUNDANT SIDE



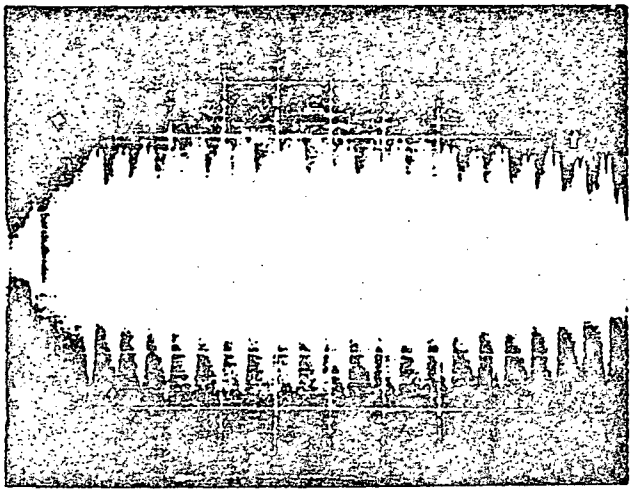
(1A)* SMA CURRENT/DIV: .1
(2A) BUS CURRENT/DIV: 200mA
(200uS) SWEEP RATE: 200μsec

*Using 0.1Ω shunt and 100mV/Div on scope.

10.4 Performance test (continued)

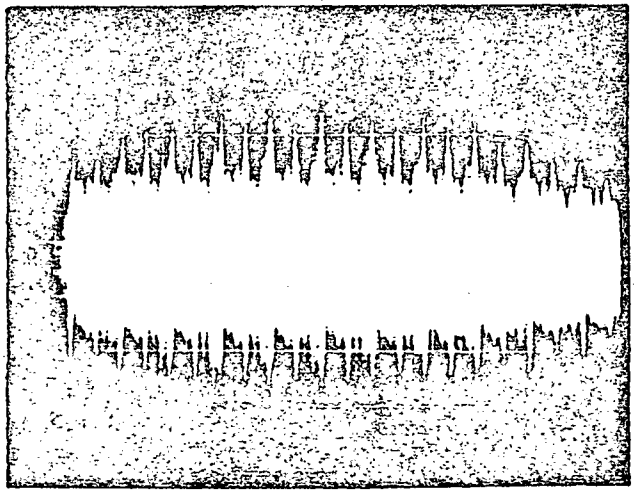
REF. PARA. DESCRIPTION

5.10.7.1 Photograph of reflected input current ripple - PRIMARY SIDE



(1mA) CURRENT/DIV: 2mA A.C
(10uS) SWEEP RATE: 10 μsec

5.10.7.1 Photograph of reflected input current ripple - REDUNDANT SIDE

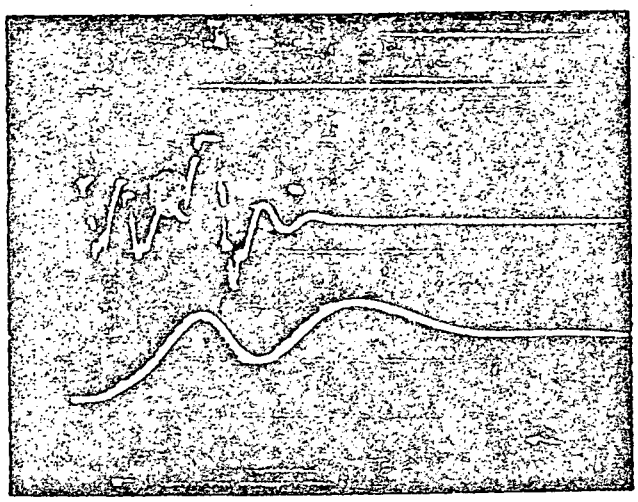


(1mA) CURRENT/DIV: 2mA A.
(10uS) SWEEP RATE: 10 μsec

5.10.8.1.1 Input current - full load S26-1, S27-2 (S27-4 for RDT) 129.46 139.30

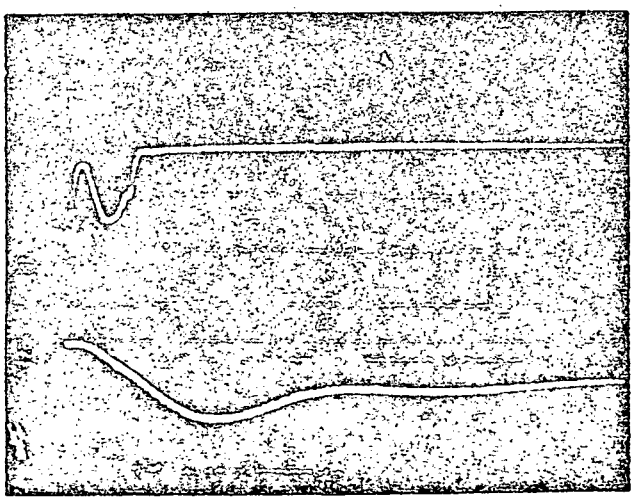
5.10.8.1.2 Input current w/o analog load Same 102.54 ~~127.24~~ 105.81 R Elliott 2-1-82

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2 V
(1A) CURRENT/DIV: 1 A
(500uS) SWEEP RATE: 500 uSec

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is disabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 2 V
(1A) CURRENT/DIV: 1 A
(1mS) SWEEP RATE: 500 uSec

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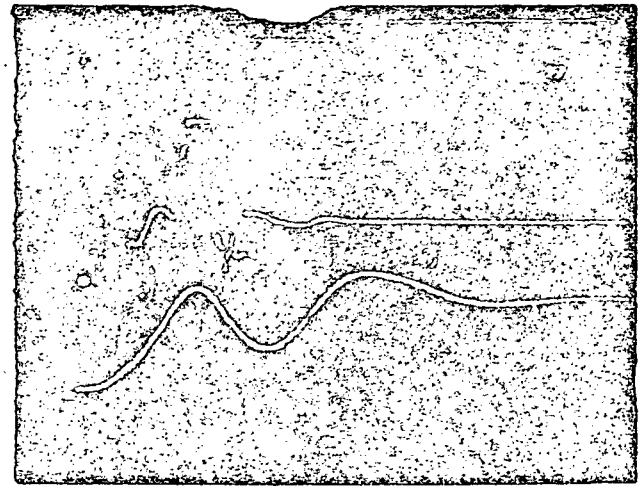
10.4 Performance test (continued)

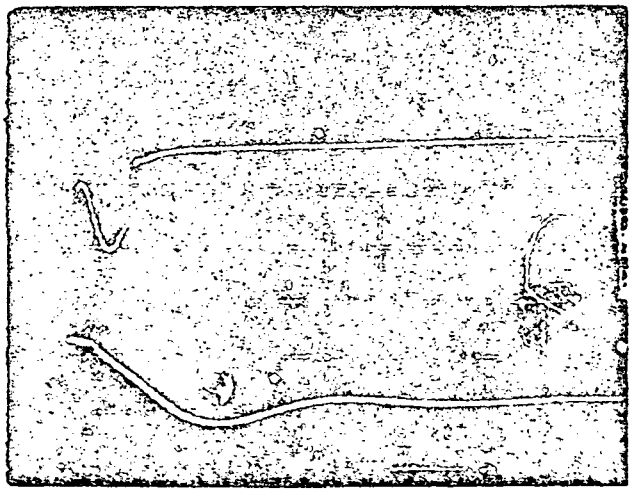
REF. PARA.	DESCRIPTION

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is enabled - REDUNDANT SIDE.



(2V) VOLTAGE/DIV: 2v
(1A) CURRENT/DIV: 1a
(500uS) SWEEP RATE: 500μsec

5.10.8.1.3 Photograph of transients induced on input bus current and analog - output voltage as analog output is disabled - REDUNDANT SIDE.



(5V) VOLTAGE/DIV: 2v
(1A) CURRENT/DIV: 1a
(1mS) SWEEP RATE: 500μsec

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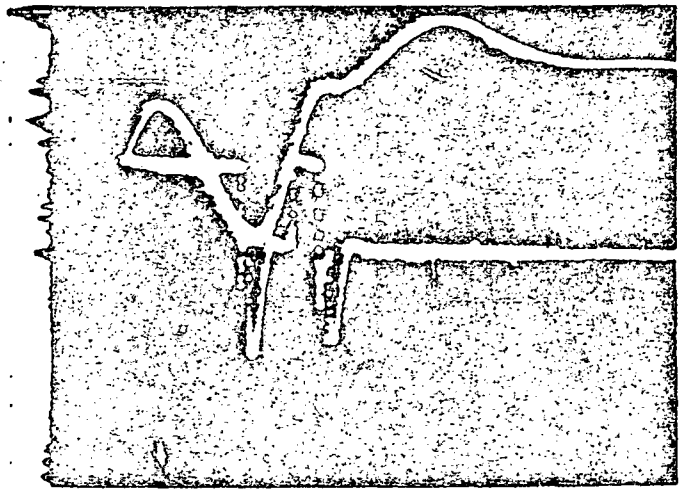
10.4 Performance test (continued)

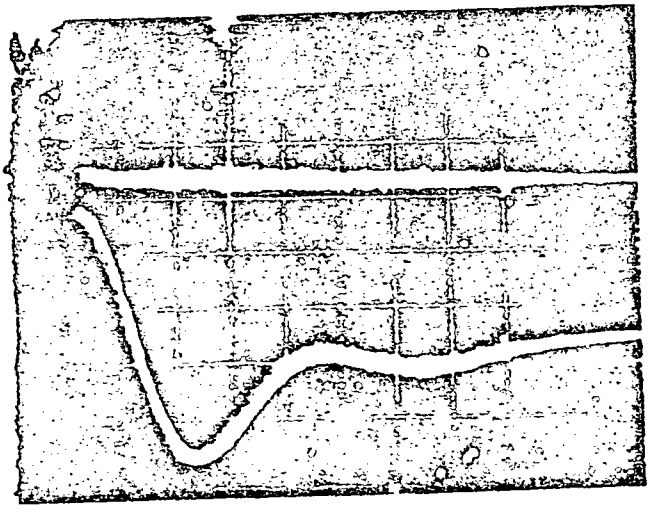
F. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDAN
5.10.8.2.1	Input bus current w/o SMA +7V load	S26-1, S27-2 (S27-4 for RDT)		118.07	119.42

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output SIDE.



(5V) VOLTAGE/DIV: 2 2V
(1A) CURRENT/DIV: .2A
(200uS) SWEEP RATE: 500 usec

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - PRIMARY SIDE.

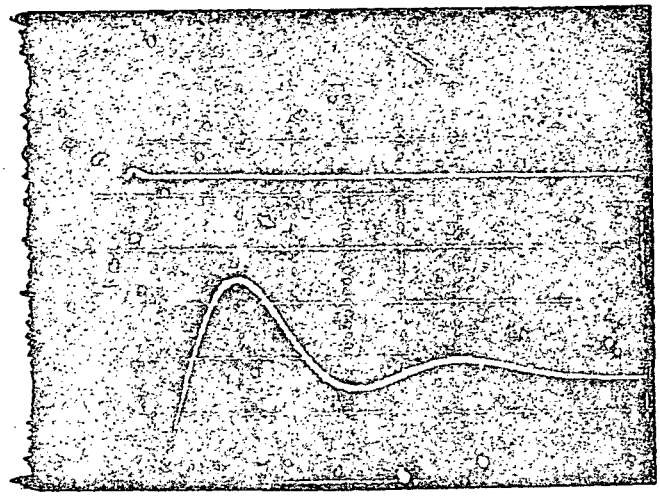


(2V) VOLTAGE/DIV: 2 2V
(1A) CURRENT/DIV: .2 A
(2mS) SWEEP RATE: 500 usec

10.4 Performance test (continued)

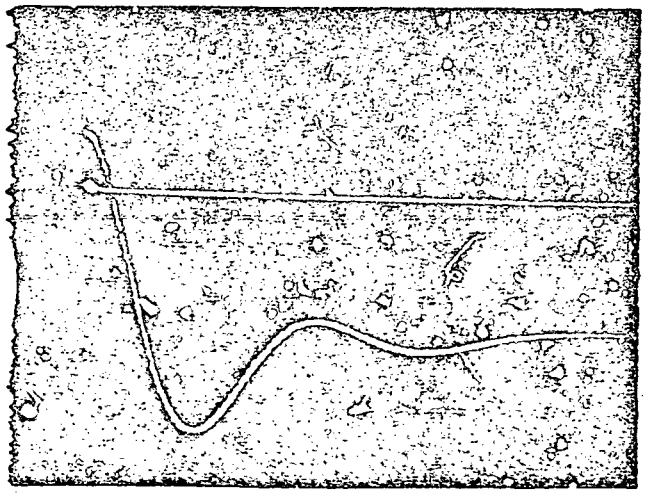
REF. PARA. DESCRIPTION

3.10.8.2.2 Photograph of transients induced on input bus current and SMA +7 output voltage as SMA +7V is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: .2A
(200uS) SWEEP RATE: 50µsec

3.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: .2A
(2mS) SWEEP RATE: 500µsec

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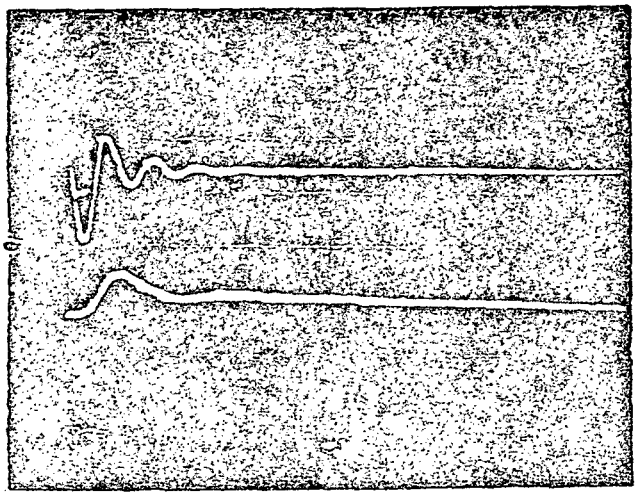
10.4 Performance test (continued)

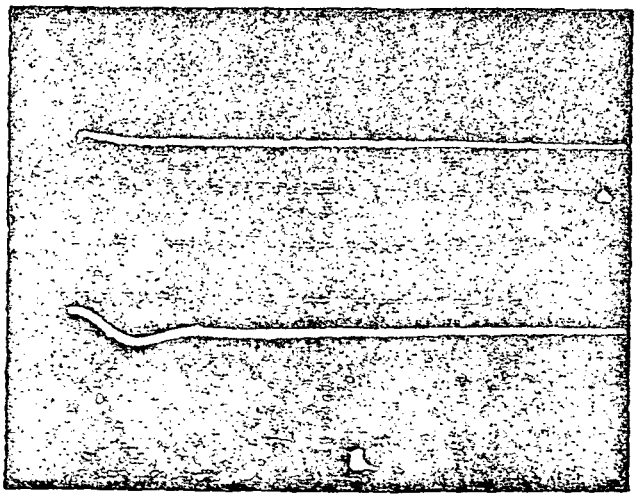
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.2.3	Input bus current w/o SMA ±29V load	S26-1, S27-2 (S27-4 for RDT)		125.64	127.94

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA +29V is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V
(0.5V) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 1mS

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V
(0.5A) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 1mS

10.4 Performance test (continued)

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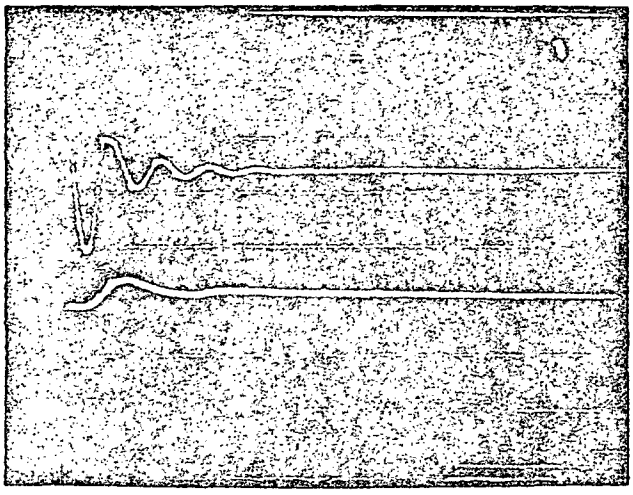
TF. PARA.	DESCRIPTION

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is enabled - REDUNDANT SIDE



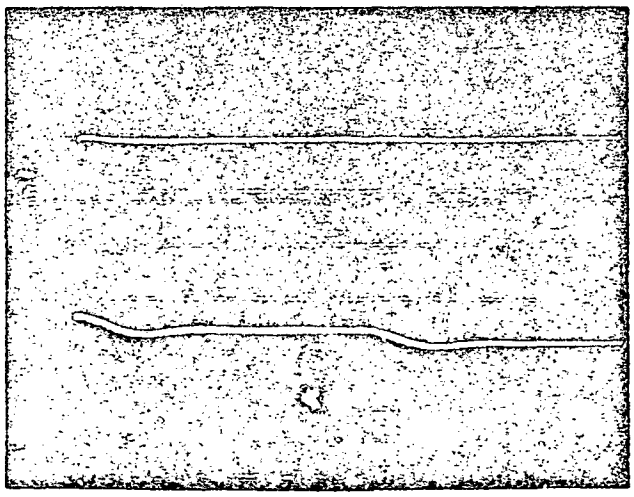
SAME

(2V) VOLTAGE/DIV: ____

(.A) CURRENT/DIV: "

(1mS) SWEEP RATE: "

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as ±29V is disabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: SAME

(0.5) CURRENT/DIV: "

(1mS) SWEEP RATE: "

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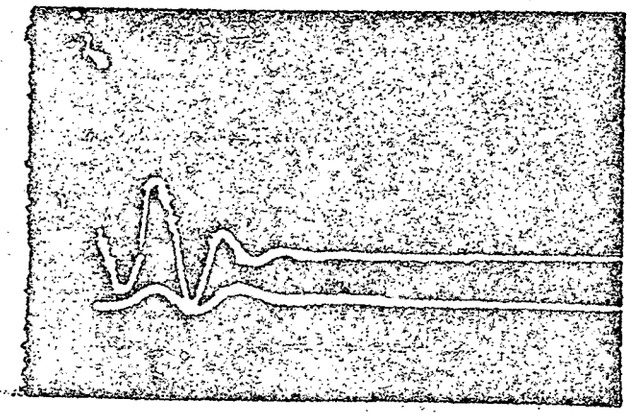
10.4 Performance test (continued)

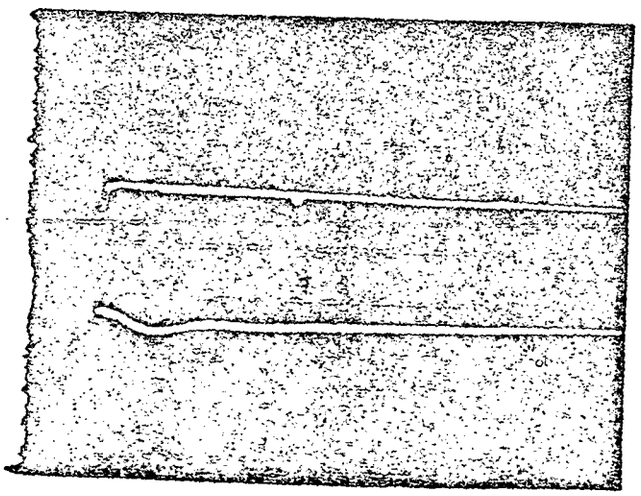
EF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.3.1	Input bus current w/o CDVU load	S26-1, S27-2 (S27-4 for RDT)		127.15	128.77

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V
(0.5A) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 1mS

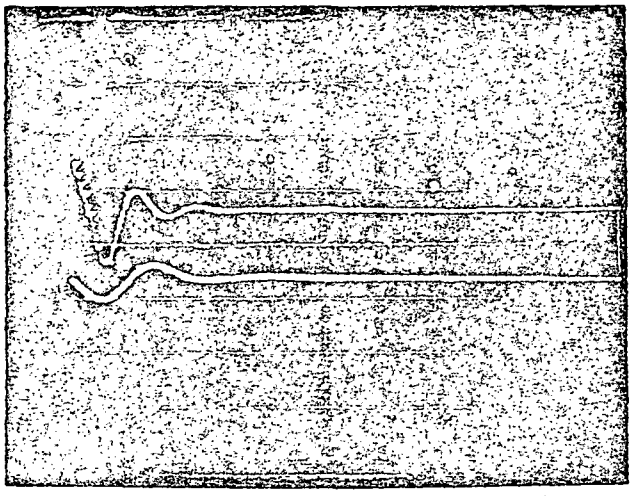
.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V
(0.5V) CURRENT/DIV: .5
(1mS) SWEEP RATE: 1mS

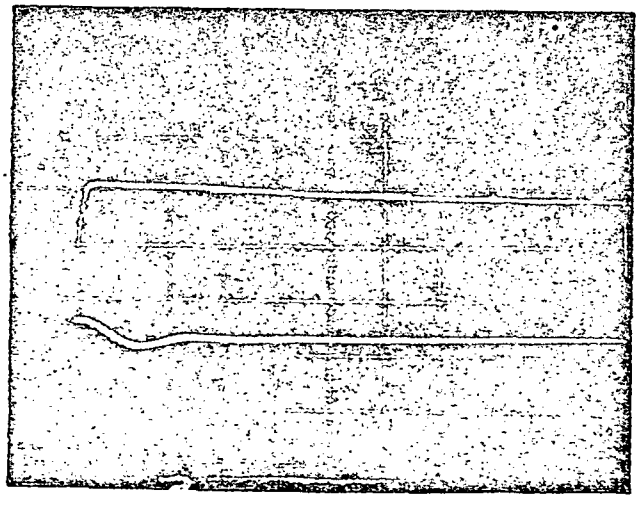
10.4 Performance test (continued)

F. PARA.	DESCRIPTION
5.10.8.3.2	Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - REDUNDANT SIDE



Same
(2V) VOLTAGE/DIV: _____
(0.5A) CURRENT/DIV: "
(1mS) SWEEP RATE: "

5.10.8.3.2	Photograph as transients induced on input bus current and CDVU output voltage as CDVU is disabled - REDUNDANT SIDE



Same
(2V) VOLTAGE/DIV: _____
(0.5A) CURRENT/DIV: "
(1mS) SWEEP RATE: "

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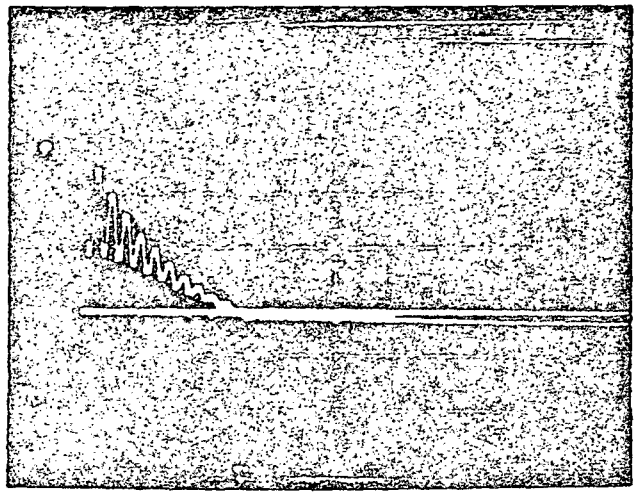
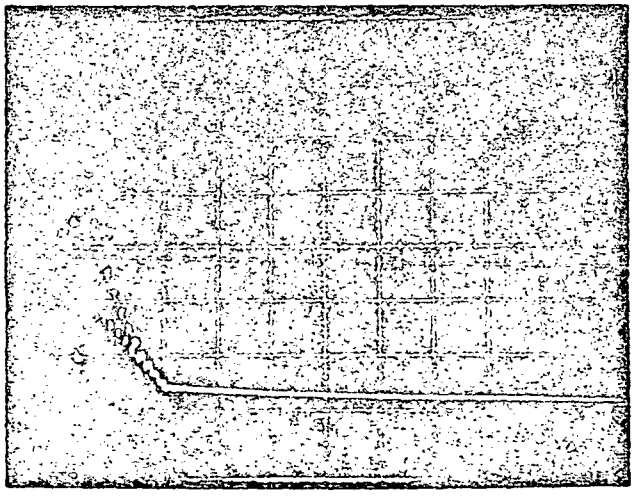
10.4 Performance test (continued)

F. PARA.	DESCRIPTION
5.10.9.1	Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(500uS) SWEEP RATE: 500 uSec

Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(500uS) SWEEP RATE: 1 mSec

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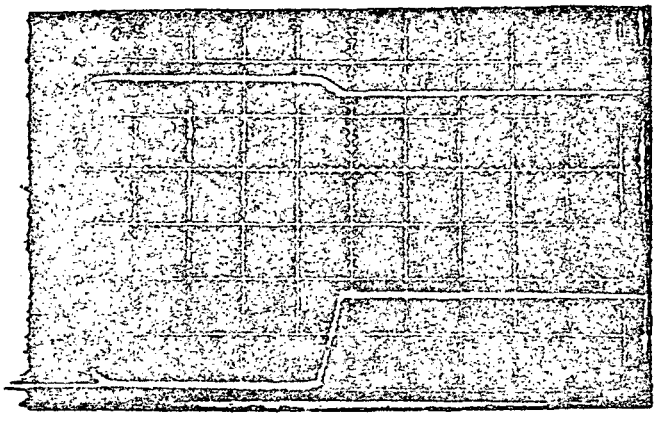
10.4 Performance test (continued)

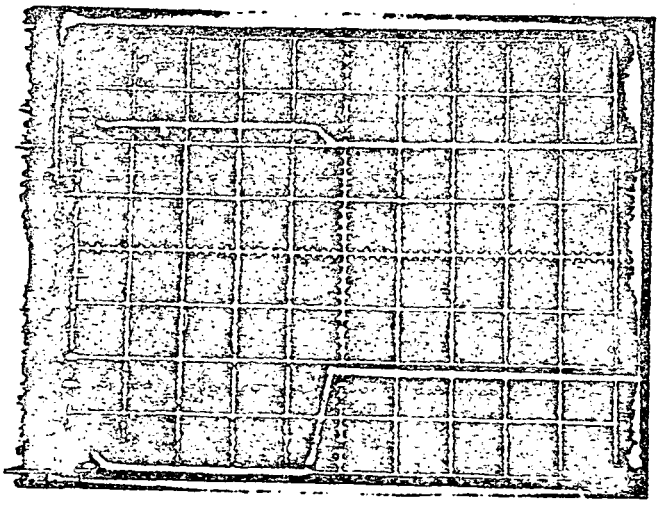
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.9.2	UUT stays off when bus is reapplied.	S1-ON (S2-ON for RDT)	--	✓	✓

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(100mS) SWEEP RATE: 100mS

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - REDUNDANT SIDE



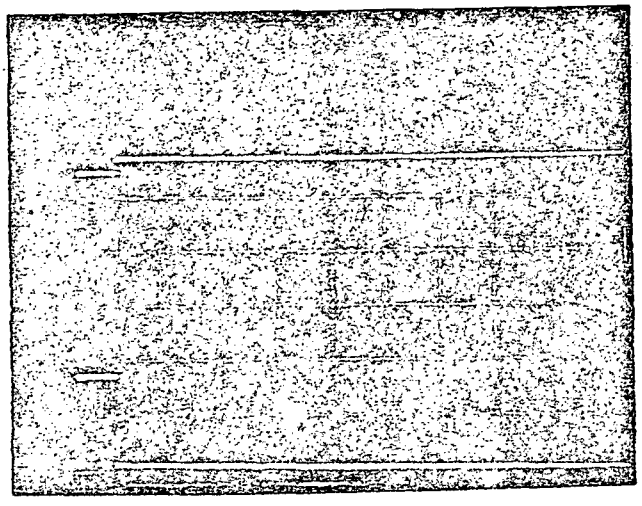
(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(100mS) SWEEP RATE: 100

59

10.4 Performance test (continued)

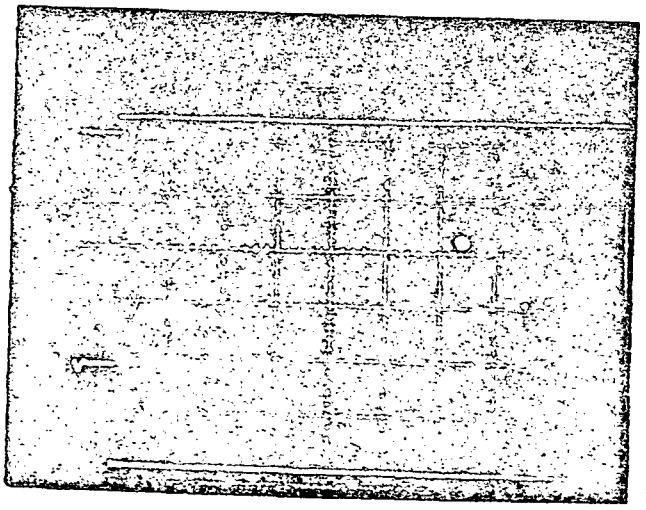
REF. PARA.	DESCRIPTION

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(10mS) SWEEP RATE: 10mS

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(10mS) SWEEP RATE: 10mS

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	PRIMARY	REDUNDAN
5.10.9.5	Record	S27-2 (S27-4)		125.51mV	131.34
5.10.9.6	Record	(S27-4 (S27-2)		46.35mV	20.34
	Record	S27-2 (S27-4)		26.40mV	111.48
5.10.9.7	Record that UUT turns on.	(Checkmark)		✓	✓
5.10.10.1	Input bus current AFTER it reads ~ 17A AND input bus voltage reads ~ 21V.	S26-1, S27-2 (S27-4 for RDT)		139.9mV	151.31
5.10.10.2	Input bus voltage with 17.0A load	S26-1, S27-1 (S27-3 for RDT)	8-3-82	28.62V	28.11
5.10.10.3	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)	4.086	3.745V	4455
5.10.10.4	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.532V	3.561
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.06V	28.01
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		123.27A	126.33
5.10.10.5	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.046V	3.056
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.01V	28.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		108.03mV	108.82
5.10.10.6	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.570V	2.593
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.02V	28.06
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		92.47mV	91.12
5.10.10.7	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.996V	2.064
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.01V	28.03
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		75.16mV	7916

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDAN
5.10.10.8	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.536V	1.522
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.01V	28.01
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		60.48mV	61.38
5.10.10.9	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.099V	1.0984
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.00V	28.02
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		41.28mV	45.69
5.10.10.10	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		.5168V	.5559
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		29.06V	28.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		34.99mV	29.95mV
5.10.10.11	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		.194 V	.2268
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		29.05V	28.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		28.20mV	24.09
5.10.10.12	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		-28.00	-98.65
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.01	28.02
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		11.959mV	12.20
5.10.11.1	Band 1+ output voltage	S26-1, S27-5		23.74V	24.74
5.10.11.2	Band 1- output voltage	S27-6		-23.89	-24.25
5.10.11.3	2+	S27-7		24.32	24.03
5.10.11.4	2-	S27-8		-24.32	-24.48
5.10.11.5	3+	S27-9		25.47	24.51
5.10.11.6	3-	S27-10		-23.56	-24.20
5.10.11.7	Band 4+ output voltage	S26-1, S27-11		24.21	24.67

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.11.8	Band 4- output voltage	S26-1, S27-12		-23.89	-24.40
5.10.11.9	5,7+	S26-2, S27-1		23.26	24.1
5.10.11.10	5,7-	S27-2		-23.20	-23.93
5.10.11.11	6+	S27-3		22.95	23.84
5.10.11.12	Band 6-	S27-4		-23.45	-24.07
5.10.11.13	SMA Htr +	S27-5		24.61	25.25
5.10.11.14	Htr -	S27-6		-24.69	-25.1
5.10.11.15	+7V	S27-7		9.88	N/A
5.10.11	+7V	(S27-8 For RDT)		N/A	9.358
5.10.11	+29V	S27-9		31.24	N/A
5.10.11	+29V	(S27-11 For RDT)		N/A	31.62
5.10.11	-29V	S27-10		-31.60	N/A
	SMA -29V	S26-2, (S27-12 for RDT)		N/A	-31.47
5.10.11.18	Radiometer	S26-3, S27-2		9.391	9.771
5.10.11.19	CDVU	S27-3		9.379	9.265
5.10.11.20	Analog +	S27-4		25.98	26.38
5.10.11.21	Analog -	S27-5		-24.81	-24.81
5.10.11.22	Electromech.	S27-6		41.59	42.03
5.10.11.23	Outgas	S27-7		101.25	100.73
5.10.11.24	Parasitic	S27-9		30.81	N/A
	Parasitic output voltage	S26-3, (S27-10 for RDT)		N/A	31.80
5.10.11.25	Band 1+ TM output	S26-4, S28-5		4.332	4.526
5.10.11.26	1-	S28-6		4.346	4.415
5.10.11.27	2+	S28-7		4.424	4.380
5.10.11.28	2-	S28-8		4.405	4.428
5.10.11.29	3+	S28-9		4.633	4.444
5.10.11.30	3-	S28-10		4.294	4.409
5.10.11.31	4+	S28-11		4.394	4.479
5.10.11.32	4-	S26-4, S28-12		4.340	4.435
5.10.11.33	Band 5,7+ TM output	S26-5, S28-1		4.244	4.410

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.11.34	Band 5,7- TM output	S26-5, S28-2		4.230	4.360
5.10.11.35	6+	S28-3		4.150	4.316
5.10.11.36	Band 6-	S28-4		4.277	4.390
5.10.11.37	SMA Htr +	S28-5		4.480	4.609
5.10.11.38	Htr -	S28-6		4.445	4.541
5.10.11.39	+7V	S28-7 (S28-8 for RDT)		6.152	5.772
5.10.11.40	+29V	S28-9 (S28-11 for RDT)		4.258	4.338
5.10.11.41	SMA -29V	S26-5, S28-10 (S28-12 for RDT)		3.839	3.847
5.10.11.42	Radiometer	S26-6, S28-2		5.086	5.296
5.10.11.43	CDVU	S28-3		5.194	5.130
5.10.11.44	Analog +	S28-4		4.609	4.628
5.10.11.45	Analog -	S28-5		4.094	4.275
5.10.11.46	Electromech.	S28-6		5.083	5.137
5.10.11.47	Outgas - TM output	S26-6, S28-7		5.039	5.013
5.10.12.1	Bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.45	29.00
5.10.12.2	Input bus current	S26-1, S27-2 (S27-4 for RDT)		42.25ma	42.57
5.10.12.3	SMA Htr + output voltage	S26-2, S27-5		21.48V	21.77
5.10.12.4	Htr + ripple	Seen on Scope	<630 mV pk-pk	40	40
5.10.12.5	Htr - voltage	S26-2, S27-6		-22.01	-22.38
5.10.12.6	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	40	30
5.10.12.7	CDVU voltage	S26-3, S27-3		7.454V	7.668
5.10.12.8	CDVU ripple	Seen on Scope	<240 mV pk-pk	60	40
5.10.12.9	Outgas - output voltage	S26-3, S27-7		86.39ma	86.47V
5.10.12.10	Outgas - output ripple	Seen on Scope	2.50V pk-pk	230mV	250mV
5.10.12.11	Parasitic output voltage	S26-3, S27-9 (S27-10 for RDT)		30.03V	30.33
5.10.12.12	Parasitic output ripple	Seen on Scope	<900 mV pk-pk	100	100

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10.4 Performance test (continued)

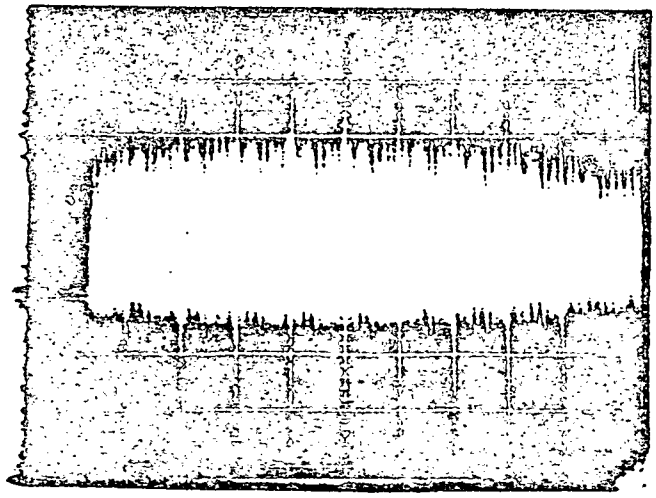
EF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.13.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		1.022V	0.991V
5.10.13.2	SMA Htr + output	S26-5, S28-5		3.911	4.307
5.10.13.3	SMA Htr -	S26-5, S28-6		3.993	4.200
5.10.13.4	CDVU	S26-6, S28-3		4.180	4.301
5.10.13.5	Outgas output telemetry	S26-6, S28-7		4.312	4.339

5.10.14.1 Photograph of reflected input current ripple in outgas mode — PRIMARY SIDE

(2mA) CURRENT/DIV: 2 mA A.C.

(10uS) SWEEP RATE: 10 usec

5.10.14.1 Photograph of reflected input current ripple in outgas mode — REDUNDANT SIDE



(2mA) CURRENT/DIV: 2mA A.C.

(10uS) SWEEP RATE: 10 usec

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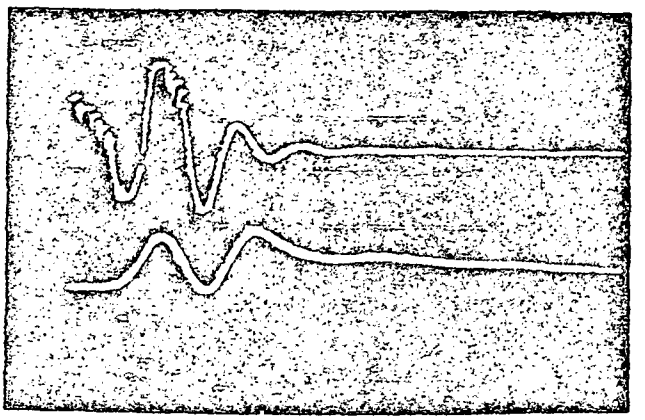
10.4 Performance test (continued)

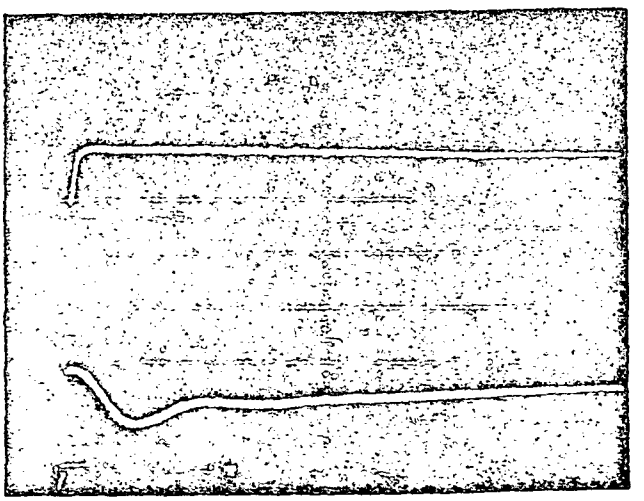
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.1.1	Input current with CDVU off.	S26-1, S27-2 (S27-4 for RDT)		39.97mA	40.26

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2 V
(200mA) CURRENT/DIV: 200mA
(1mS) SWEEP RATE: 1mS

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V
(200mA) CURRENT/DIV: 200mA
(2mS) SWEEP RATE: 1mS

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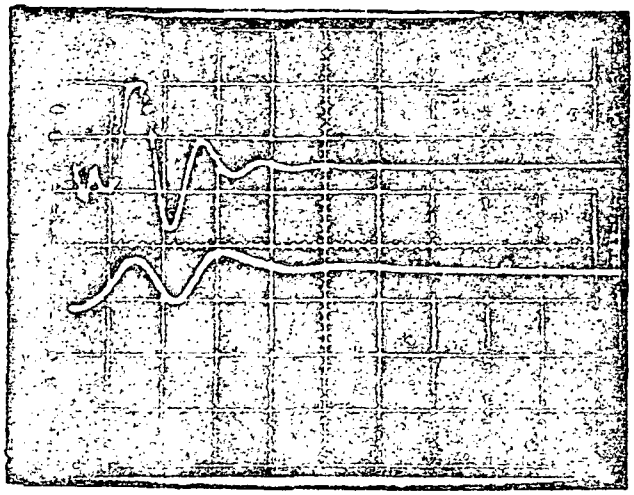
10.4 Performance test (continued)

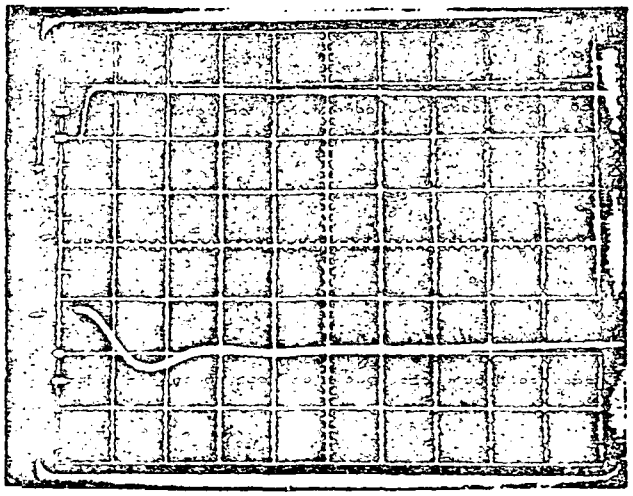
REF. PARA.	DESCRIPTION

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled — REDUNDANT SIDE



(2V) VOLTAGE/DIV: Same
(200mA) CURRENT/DIV: "
(1mS) SWEEP RATE: "

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled — REDUNDANT SIDE



(2V) VOLTAGE/DIV: Same
(200mA) CURRENT/DIV: "
(2mS) SWEEP RATE: "

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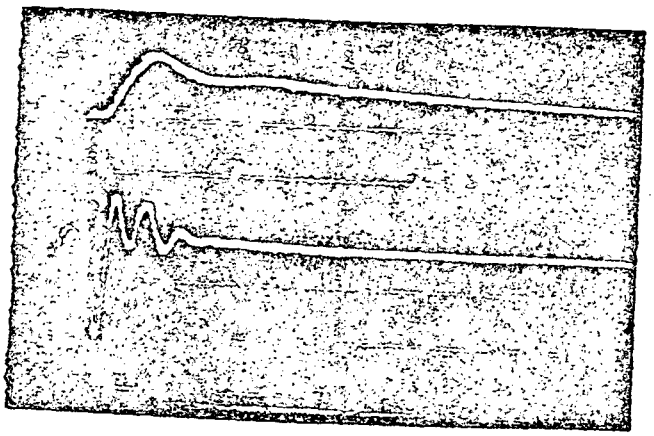
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.2.1	Input bus current with outgas disabled	S26-1, S27-2 (S27-4 for RDT)		14.88mV	15.14

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - PRIMARY SIDE

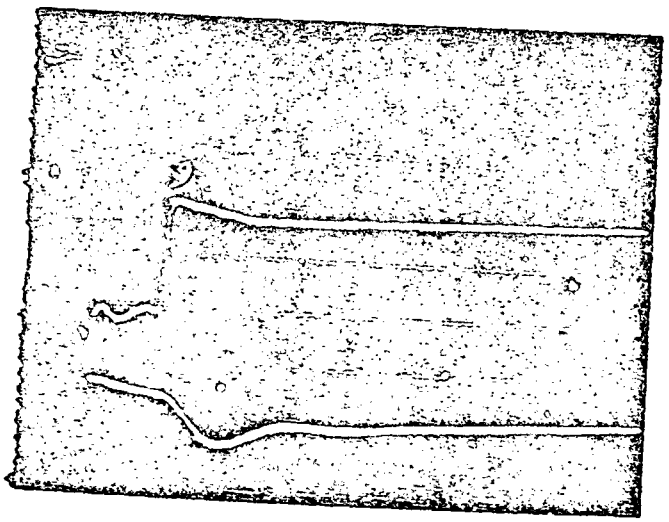


I_{Bus}

Voltage

(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - PRIMARY SIDE

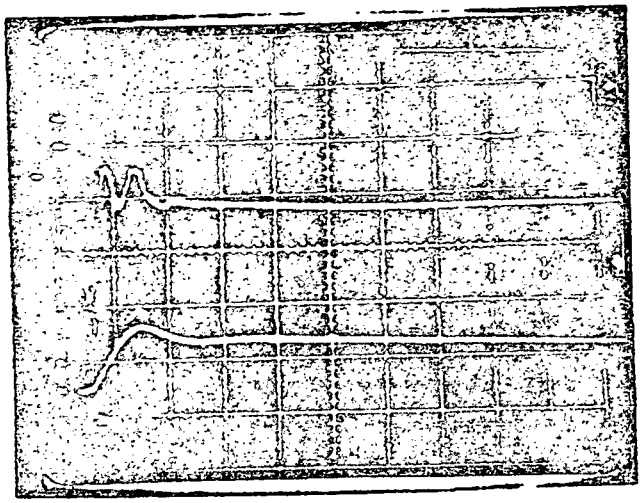


(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(2mS) SWEEP RATE: 1mS

10.4 Performance test (continued)

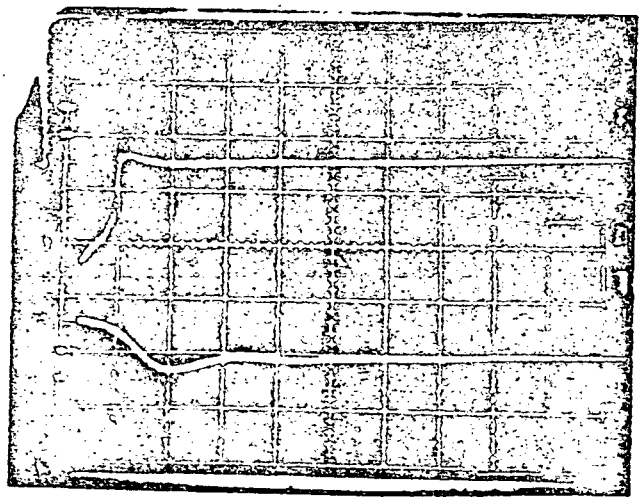
REF. PARA. DESCRIPTION

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: Same
(2A) CURRENT/DIV: "
(500uS) SWEEP RATE: "

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: Same
(2A) CURRENT/DIV: 4
(1mS) SWEEP RATE: "

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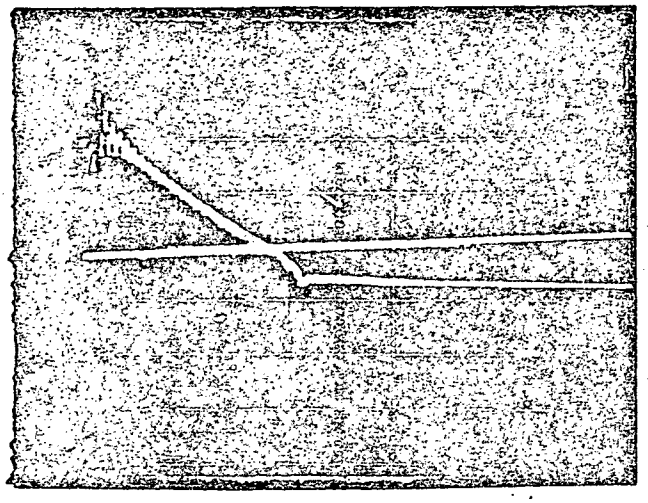
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITION	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.16.1	BPS voltage	S26-1, S27-1 (S27-3 for RDT)		28.06V (49)	28.03
5.10.16.2	BPS current	S26-1, S27-2 (S27-4 for RDT)		17.63mA (50)	18.14
5.10.16.3	SMA Htr +output voltage	S26-2, S27-5		21.66V (13)	21.82
5.10.16.4	SMA Htr +load current	S26-8, S34-1		46.48mA (38)	47.69
5.10.16.5	SMA Htr -output voltage	S26-2, S27-6		-21.93 (14)	-22.26
5.10.16.6	SMA Htr -load current	S26-8, S34-2		-9.660mA (39)	-5.785
5.10.16.7	CDVU output voltage	S26-3, S27-3		7.0462V (20)	7.656
5.10.16.8	CDVU load current	S26-8, S34-10		.266V (45)	274.1
5.10.16.9	Parasitic output voltage	S26-3, S27-9 (S27-10)		30.49V (23)	30.90
5.10.16.10	Parasitic load current	S26-8, S34-7		142.86mA (46)	166.03
5.10.16.11	Input power (5.10.16.1 x 5.10.16.2)			49.49	50.95
5.10.16.12	Output power ((5.10.16.3 x 5.10.16.4) + (5.10.16.5 x 5.10.16.6) + (5.10.15.7 x 5.10.16.8) + (5.10.16.9 x 5.10.16.10))	(Primary) N/A		16.928	17.52
5.10.16.13	Efficiency ((5.10.16.12) ÷ (5.10.16.11)) x 100%	(Redundant) N/A		34.2%	34.5%

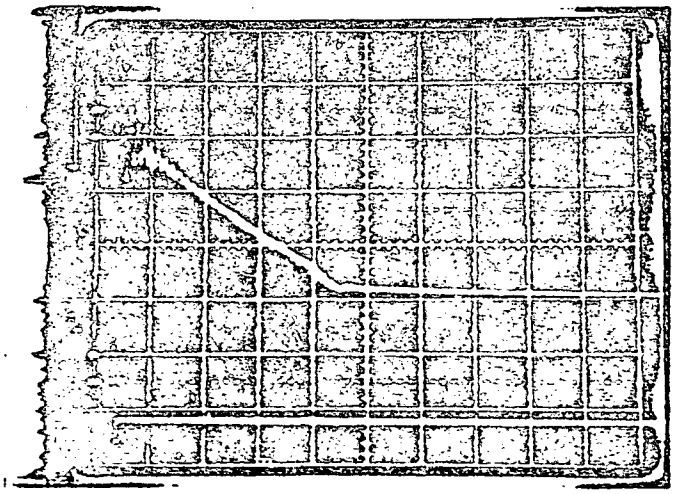
10.4 Performance test (continued)

5.10.17.1 Photograph of input bus current and input bus voltage as is disable - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

5.10.17.1 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

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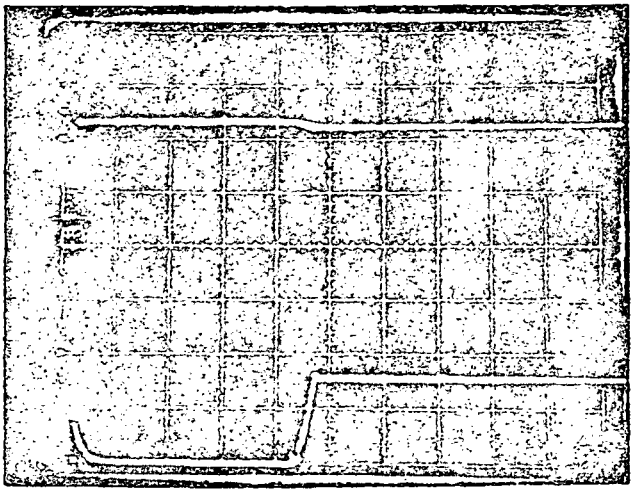
10.4 Performance test (continued)

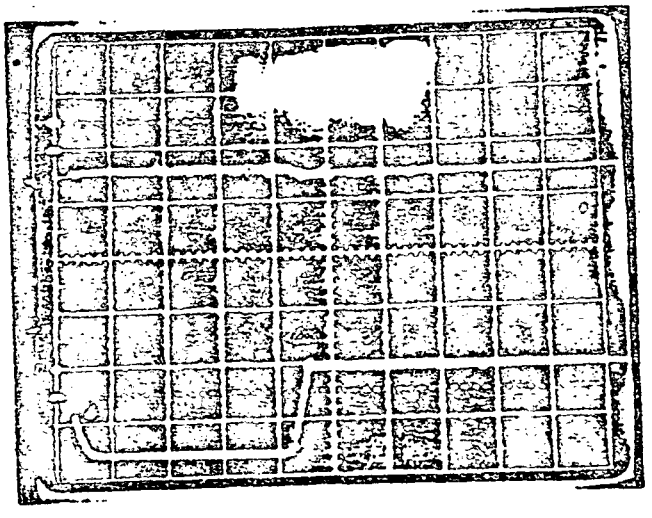
5.10.17.2 Unit stays off (check) ✓ Primary ✓ Redundant

5.10.17.3 Photograph of input bus current and input bus voltage as is enabled - PRIMARY SIDE



5V
(2V) VOLTAGE/DIV: ~~2V~~
(2A) CURRENT/DIV: 2A
(100mS) SWEEP RATE: 100mS

5.10.17.3 Photograph of input bus current and input bus voltage as as is enabled - REDUNDANT SIDE



5V
(2V) VOLTAGE/DIV: ~~2V~~
(2A) CURRENT/DIV: 2A
(100mS) SWEEP RATE: 100mS

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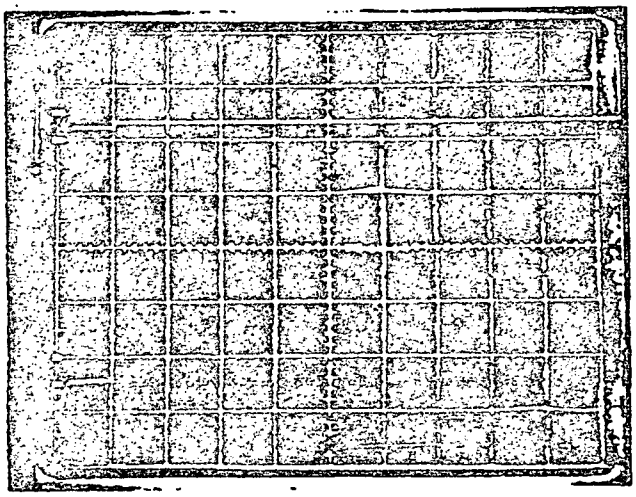
10.4 Performance test (continued)

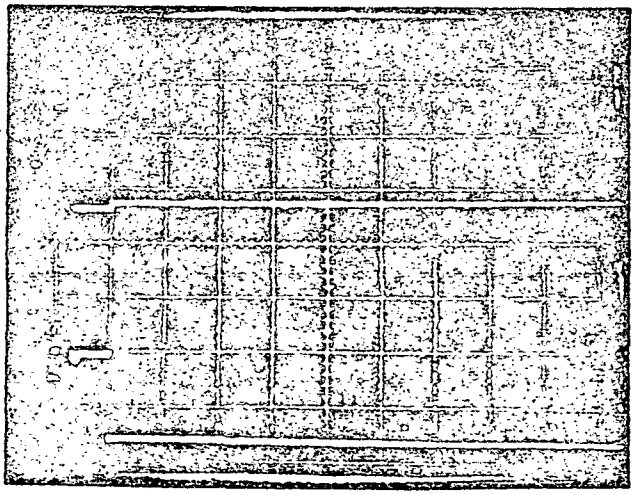
MAC TEST S23

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 10mS

5.10.17.4 Photograph of input bus current and input bus voltage



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 10mS

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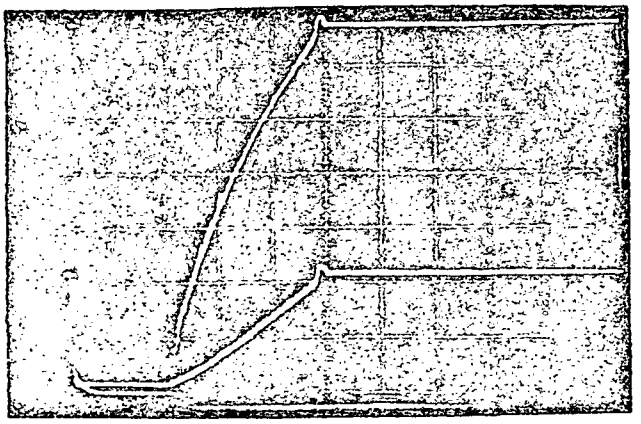
10.4 Performance test (continued)

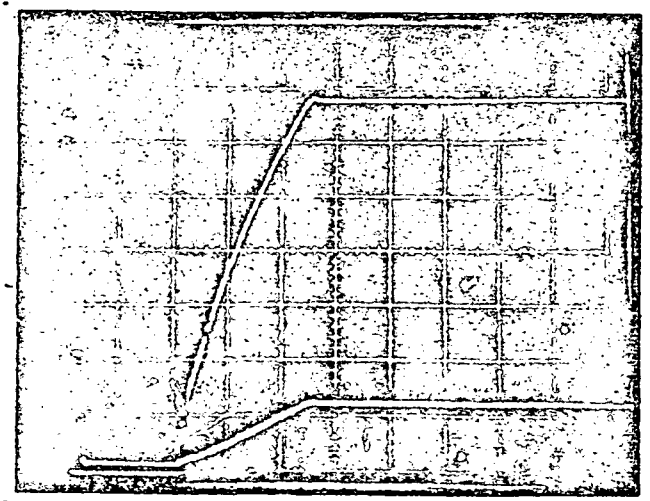
F. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	REDUNDANT
5.10.17.5	Record that UUT operates correctly.		(checkmark)	✓	✓

5.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5 V
(5A) CURRENT/DIV: 5 A
(20mS) SWEEP RATE: 20 m S

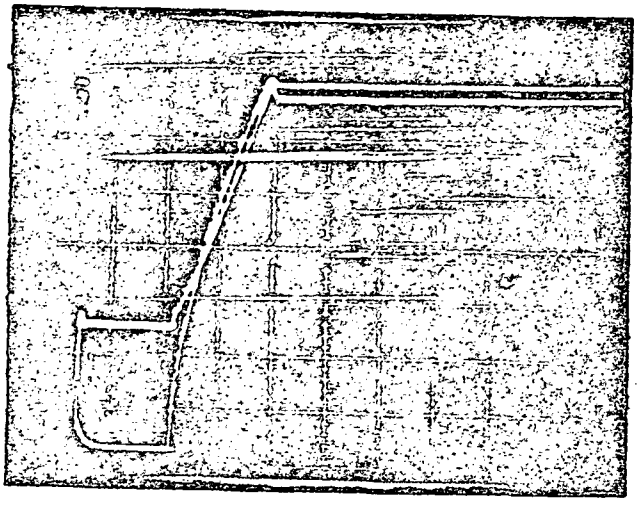
5.10.18.2 Photograph of input bus current and parasitic output voltage as parasitic enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5 V
(5A) CURRENT/DIV: 5 A
(20mS) SWEEP RATE: 20 m S

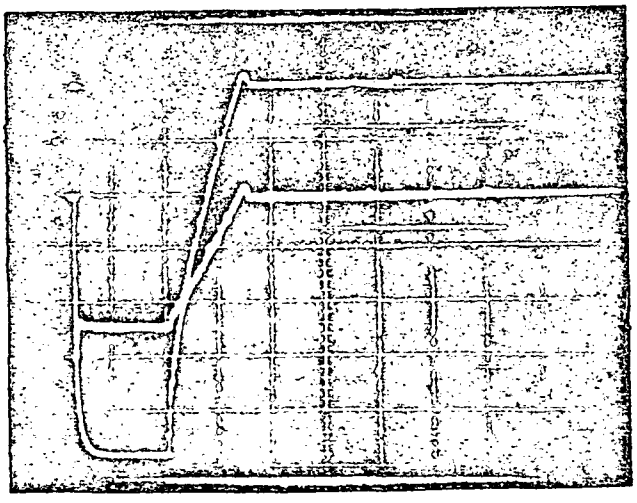
10.4 Performance test (continued)

.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



5V) VOLTAGE/DIV: 5V
5A) CURRENT/DIV: 2A
20mS) SWEEP RATE: 20ms

5.10.18.2 Photograph of input bus current and MUX output voltage as parasitic enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5v) Volts/Div: 5V
(5A) Current/Div: 2A
(20mS) Sweep Rate: 20ms

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	SWM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.18.4	Undervoltage Trip Point (ON/OFF)	S26-1, S27-1 (S27-3 for RDT)	18.0 ±1.50V	18.07V	18.01
5.10.18.5	UUT stays OFF			✓	✓
5.10.18.6	Undervoltage Trip Point (OFF/ON)	S26-1, S27-1 (S27-3 for RDT)	19.0 ±1.50V	18.92	18.88
5.10.18.7	Overvoltage Trip Point	S26-1, S27-1 (S27-3 for RDT)	38.0 ± 2V	38.69	39.14 SCN 2
5.10.18.8	UUT stays OFF			✓	✓
5.10.18.9	UUT turns ON			✓	✓

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TESTER(S)

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Appendix C - Part 3

Power Supply Performance Data

Long Form Test Data

HAC TEST S30

10.4 Performance test - Long Form

PROTOFLIGHT DNA, OR FLIGHT ✓, S/N 004 TEMPERATURE: +32°F.
IN-PROCESS DNA, QUAL DNA, OR ACCEPTANCE ✓
TESTING PHASE FINAL COLD CYCLE LINE VOLTAGE: +35.0 VOLTS

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.1.1	Calibrate cmd gen	--	--	✓	✓
5.10.2.1	Input bus current	S26-1, S27-2 (S27-4 for redundant)		.238 mV	.228 mV ✓
5.10.2.2	MUX output voltage	S26-3, S27-1	30.0 ±0.90V	29.83V	30.09V ✓
5.10.2.3	MUX load current	S26-3, S27-12	3.55 ±0.40A	32.46 mV	33.15 mV ✓

The rest of Section 5.10.2 requires only checking voltage - indicate by checkmarks.

5.10.2.4.1	B1 + output voltage	S26-1, S27-5	✓	✓
5.10.2.4.2	B1 -	S27-6	✓	✓
5.10.2.4.3	B1 -	S27-5	✓	✓
5.10.2.4.4	B1 +	S27-7	✓	✓
5.10.2.5.1	B2 +	S27-7	✓	✓
5.10.2.5.2	B2 -	S27-8	✓	✓
5.10.2.5.3	B2 -	S27-8	✓	✓
5.10.2.5.4	B2 +	S27-7	✓	✓
5.10.2.6.1	B3 +	S27-9	✓	✓
5.10.2.6.2	B3 -	S27-10	✓	✓
5.10.2.6.3	B3 -	S27-10	✓	✓
5.10.2.6.4	B3 +	S27-9	✓	✓
5.10.2.7.1	B4 +	S27-11	✓	✓
5.10.2.7.2	B4 -	S27-12	✓	✓
5.10.2.7.3	B4 -	S27-12	✓	✓
5.10.2.7.4	B4 +	S26-1, S27-11	✓	✓
5.10.2.8.1	B5,7+	S26-2, S27-1	✓	✓
5.10.2.8.2	B5,7-	S27-2	✓	✓
5.10.2.8.3	B5,7-	S27-2	✓	✓
5.10.2.8.4	B5,7+	S27-1	✓	✓
5.10.2.9.1	B6 +	S27-3	✓	✓
5.10.2.9.2	B6 - output voltage	S26-2, S27-4	✓	✓

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10.4 Performance test (continued)

REF PARA	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.2.9.3	S6 - output voltage	S26-2, S27-4		✓	✓
5.10.2.9.4	S6 + output voltage	S26-2, S27-3		✓	✓
5.10.2.10.1	SMA HTR + output voltage	S27-5		✓	✓
5.10.2.10.2	-	S27-6		✓	✓
5.10.2.10.3	-	S27-6		✓	✓
5.10.2.10.4	+	S27-5		✓	✓
5.10.2.11.1	+7V	S26-2, S27-7		✓	
5.10.2.11.2	+7V	(S27-8 for RDT)			✓
5.10.2.12.1	+29V	S26-2, S27-9		✓	
		(S27-11 for RDT)			✓
5.10.2.12.2	-29V	S26-2, S27-10		✓	
		(S27-12 for RDT)			✓
5.10.2.12.3	-29V	S26-2, S27-10		✓	✓
5.10.2.12.4	SMA HTR +29V	S26-2, S27-9		✓	✓
5.10.2.13.1	Radiometer	S26-3, S27-2		✓	✓
5.10.2.13.2	Radiometer	S27-2		✓	✓
5.10.2.14.1	CDVU	S27-3		✓	✓
5.10.2.14.2	CDVU	S27-3		✓	✓
5.10.2.15.1	Analog +	S27-4		✓	✓
5.10.2.15.2	Analog -	S27-5		✓	✓
5.10.2.15.3	Analog -	S27-5		✓	✓
5.10.2.15.4	Analog +	S27-4		✓	✓
5.10.2.16.1	Electromech.	S27-6		✓	✓
5.10.2.16.2	Electromech.	S27-6		✓	✓
5.10.2.17.1	Outgas output voltage	S26-3, S27-7		✓	✓
5.10.3.1	Bus voltage	S26-1, S27-1			
		(S27-3 for RDT)		35.03	(49) 35.02
5.10.3.2	MUX load current	S26-3, S27-12	4.130 ±0.025A	41.28mV ✓	41.45mV ✓
5.10.3.3	Bus current	S26-1, S27-2			
		(S27-4 for RDT)		104.38	(50) 107.39
5.10.3.3.2	BPS Voltage	S26-1, S27-1 S27-3)		~~35.01~~ V	34.99 V
5.10.3.3.3	BPS Current	S26-1, S27-2 (S27-4)		104.42	107.35
5.10.3.3.4	MUX Current	S26-3, S27-12		~~41.27~~	41.45

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	REDUND
5.10.3.4.1	B1 + output voltage	S26-1, S27-5	20.50 ±2.50V	20.45 (1)	20.7
5.10.3.4.2	B1 + output ripple	Look on Scope	<600 mV pk-pk	20	30
5.10.3.4.3	B1 - output voltage	S26-1, S27-6	-20.50 ±2.50V	-20.46 (2)	-20.7
5.10.3.4.4	B1 - output ripple	Look on Scope	<600 mV pk-pk	20	30
5.10.3.5.1	B2 + output voltage	S26-1, S27-7	20.50 ±2.50V	20.24 (3)	20.5
5.10.3.5.2	B2 + output ripple	Look on Scope	<600 mV pk-pk	20	30
5.10.3.5.3	B2 - output voltage	S26-1, S27-8	-20.50 ±2.50V	-20.27 (4)	-20.5
5.10.3.5.4	B2 - output ripple	Seen on Scope	<600 mV pk-pk	20	30
5.10.3.6.1	B3 + output voltage	S26-1, S27-9	20.50 ±2.50V	20.28 (5)	20.48
5.10.3.6.2	B3 + output ripple	Seen on Scope	<600 mV pk-pk	20	30
5.10.3.6.3	B3 - output voltage	S26-1, S27-10	-20.50 ±2.50V	-20.24 (6)	-20.5
5.10.3.6.4	B3 - output ripple	Seen on Scope	<600 mV pk-pk	20	30
5.10.3.7.1	B4 + output voltage	S26-1, S27-11	20.50 ±2.50V	20.42 (7)	20.7
5.10.3.7.2	B4 + output ripple	Seen on Scope	<600 mV pk-pk	20	30
5.10.3.7.3	B4 - output voltage	S26-1, S27-12	-20.50 ±2.50V	-20.25 (8)	-20.7
5.10.3.7.4	B4 - output ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.8.1	B5,7 + voltage	S26-2, S27-1	20.50 ±2.50V	2000 (9)	20.12
5.10.3.8.2	B5,7 + ripple	Seen on Scope	<600 mV pk-pk	30	30
5.10.3.8.3	B5,7 - voltage	S26-3, S27-2	-20.50 ±2.50V	-19.99 (10)	-20.15
5.10.3.8.4	B5,7 - ripple	Seen on Scope	<600 mV pk-pk	50	50
5.10.3.9.1	B6 + voltage	S26-2, S27-3	20.50 ±2.50V	20.22 (11)	20.47
5.10.3.9.2	B6 + ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.9.3	B6 - voltage	S26-2, S27-4	-20.50 ±2.50V	-20.23 (12)	-20.5
5.10.3.9.4	B6 - ripple	Seen on Scope	<600 mV pk-pk	40	50
5.10.3.10.1	SMA Htr + voltage	S26-2, S27-5	21.20 ±2.12V	22.05 (13)	22.39
5.10.3.10.2	SMA Htr + ripple	Seen on Scope	<630 mV pk-pk	20	20
5.10.3.10.3	SMA Htr - voltage	S26-2, S27-6	-21.20 ±2.12V	-22.57 (14)	22.91
5.10.3.10.4	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	20	20
5.10.3.11.1	SMA +7V voltage	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	7.67 (15)	7.819
5.10.3.11.2	SMA +7V output ripple	Seen on Scope	<210 mV pk-pk	30	30

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION		TVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.3.12.1	SMA +29V output	voltage	S26-2, S27-9 (S27-11 for RDT)	29.50 ±1.50V	30.21 (16)	30.66
5.10.3.12.2	SMA +29V	ripple	Seen on Scope	<870 mV, pk-pk	50	80
5.10.3.12.3	SMA -29V	voltage	S26-2, S27-10 (S27-12 for RDT)	-29.50 ±1.50V	-30.20 (17)	30.67
5.10.3.12.4	SMA -29V	ripple	Seen on Scope	<870 mV pk-pk	60	70
5.10.3.13.1	MUX	voltage	S26-3, S27-1	30.00 ±0.90V	29.68 (18)	30.26
5.10.3.13.2	MUX	ripple	Seen on Scope	<900 mV, pk-pk	100	90
5.10.3.14.1	Radiometer	voltage	S26-3, S27-2	8.50 ±0.85V	8.342 (19)	8.426
5.10.3.14.2	Radiometer	ripple	Seen on Scope	<250 mV pk-pk	20	30
5.10.3.15.1	CDVU	voltage	S26-3, S27-3	8.00 ±0.80V	7.459 (20)	7.651
5.10.3.15.2	CDVU	ripple	Seen on Scope	<240 mV pk-pk	20	30
5.10.3.16.1	Analog +	voltage	S26-3, S27-4	21.20 ±2.12V	22.12 (21)	22.39
5.10.3.16.2	Analog +	ripple	Seen on Scope	<630 mV pk-pk	50	50
5.10.3.16.3	Analog -	voltage	S26-3, S27-5	-21.20 ±2.12V	-22.19 (22)	-22.46
5.10.3.16.4	Analog -	ripple	Seen on Scope	<630 mV pk-pk	20	30
5.10.3.17.1	Electromech.	voltage	S26-3, S27-6	33.40 ±3.34V	32.87 (23)	33.42
5.10.3.17.2	Electromech.	ripple	Seen on Scope	<1.0V pk-pk	40	60
5.10.3.18.1	Outgas	voltage	S26-3, S27-7	100.0 ±12.0V	104.82 V	105.22 V
5.10.3.18.2	Outgas output	ripple	Seen on Scope	<3.0V pk-pk	200 mV	250 mV
5.10.4.1	Input current telemetry		S26-4, S28-2 (S28-4 for RDT)		2.923	2.945
5.10.4.2.1	Band 1 + volt. telemetry		S26-4, S28-5		3.777	3.798
5.10.4.2.2	Band 1 -		S28-6		3.726	3.780
5.10.4.3.1	Band 2+		S28-7		3.685	3.748
5.10.4.3.2	Band 2-		S28-8		3.676	3.730
5.10.4.4.1	Band 3+		S28-9		3.692	3.735
5.10.4.4.2	Band 3-		S28-10		3.695	3.749
5.10.4.5.1	Band 4+		S28-11		3.711	3.723
5.10.4.5.2	Band 4-		S26-4, S28-12		3.722	3.729
5.10.4.6.1	Band 5,7+		S26-5, S28-1		3.646	3.699
5.10.4.6.2	Band 5,7- volt. telemetry		S26-5, S28-2		3.646	3.667

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.4.7.1	Band 6 + volt. telemtry	S26-5, S28-3		3.662	-2.710
5.10.4.7.2	Band 6 -	S28-4		3.695	3.743
5.10.4.8.1	SMA Htr +	S28-5		4.030	4.073
5.10.4.8.2	SMA Htr -	S28-6		4.095	4.155
5.10.4.9	SMA +7V	S26-5, S27-7 (S27-8 for RDT)		4.877	4.968
5.10.4.10.1	SMA +29V	S26-5, S28-9 (S27-11 for RDT)		4.143	4.230
5.10.4.10.2	SMA -29V	S26-5, S28-10 (S27-12 for RDT)		3.553	3.655
5.10.4.11	MUX	S26-6, S28-1		4.252	4.285
5.10.4.12	Radiometer	S26-6, S28-2		4.574	4.619
5.10.4.13	CDVU	S26-6, S28-3		4.188	4.292
5.10.4.14.1	Analog + volt. telemtry	S26-6, S28-4		3.953	4.003
5.10.4.14.2	Analog -	S26-6, S28-5		3908	3.941
.10.4.15	Electromech.	S28-6		4.026	4.103
5.10.4.16	Outgas volt. telemetry	S26-6, S28-7		5.24	5.159
5.10.5.1.1	Analog + load current	S26-3, S27-11 mV ÷ 10 = Amps		15.646	(24) 15.65
5.10.5.1.2	MUX	S26-3, S27-12 mV ÷ 10 = Amps		40.28	(25) 41.45
5.10.5.1.3	Band 1 +	S26-7, S34-1 mV ÷ 0.5 = mA		90.81	(26) 92.21
5.10.5.1.4	Band 1 -	S34-2		-91.11	(27) -92.3
5.10.5.1.5	2 +	S34-3		89.83	(28) 91.20
5.10.5.1.6	2 -	S34-4		-90.65	(29) -92.00
5.10.5.1.7	3 +	S34-5		90.91	(30) 91.25
5.10.5.1.8	3 -	S34-6		-90.25	(31) -91.62
5.10.5.1.9	4 +	S34-7		90.86	(32) 92.20
5.10.5.1.10	4 -	S34-8		-90.53	(33) -91.9
5.10.5.1.11	5,7 +	S34-9		89.99	(34) 90.5
5.10.5.1.12	5,7 -	S34-10		-89.53	(35) -87.8
5.10.5.1.13	6 +	S34-11		46.99	(36) 47.59
5.10.5.1.14	Band 6 -	S26-7, S34-12		-46.71	(37) -47.4
5.10.5.1.15	SMA Htr +	S26-8, S34-1 mV ÷ 0.5 = mA		47.51	(38) 48.2
5.10.5.1.16	SMA Htr - load current	S26-8, S34-2 mV = mA		-8.911	(39) -9.04

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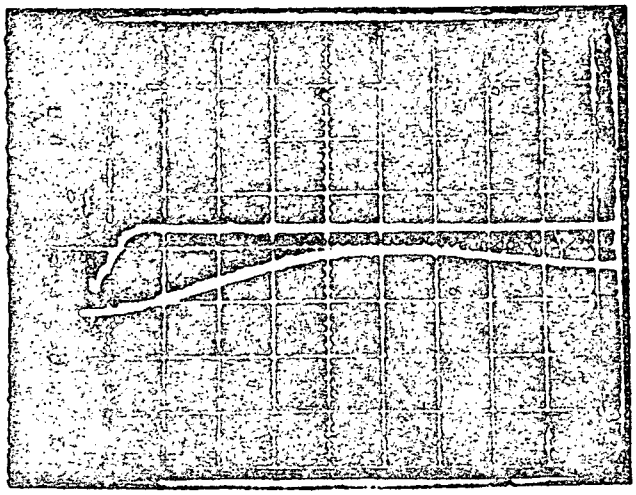
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DWH SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDA
5.10.5.1.17	SMA +29V load current	S26-8, S34-3	mV ÷ 0.402 = mA	50.39 (40)	51.1
5.10.5.1.18	SMA -29V	S34-4	mV ÷ 0.402 = mA	- 50.14 (41)	-50.6
5.10.5.1.19	SMA +7V	S34-5	V ÷ 0.1 = Amps	2808 (42)	266.
5.10.5.1.20	Analog -	S34-6	mV ÷ 0.402 = mA	- 265.7 (43)	-26
5.10.5.1.21	Radiometer	S34-9	mV ÷ 0.5 = mA	149.45 (44)	150.6
5.10.5.1.22	CDVU	S34-10	mV ÷ 0.5 = mA	267.1 (45)	274
5.10.5.1.23	Electromech. load current	S26-8, S34-11	mV ÷ 0.402 = mA	209.2 (46)	212.
5.10.5.2.1	Bus power supply voltage	S26-1, S27-1 (S27-3 for RDT)		35.80 (47)	35.6
5.10.5.2.2	Bus input current	S26-1, S27-2 (S27-4 for RDT)	mV ÷ 10 = Amps	104.35 (48)	107.
5.10.5.2.3	P_{IN} (Section 5.10.5)			365.225	375.
5.10.5.2.4	P_{IN} (Section 5.10.3)			365.643	376.0
5.10.5.2.5	P_{IN} (avg)			365.434	375.5
5.10.5.2.9	Input current at current limit		26-1, 27-2 (26-1 27-4 Rdt)	118.57	126.
	Input voltage at current limit		27-1 (27-3 Rdt)	34.83	34.8
	MUX voltage at current limit		26-3, 27-1	30.07 V.	30.1
	MUX current at current limit		27-12	50.35 mV	54.0
5.10.5.3.1	P_{OUT}			267.602	274.
5.10.5.3.2	Efficiency		>70%	73.72	73.4

10.4 Performance test (continued)

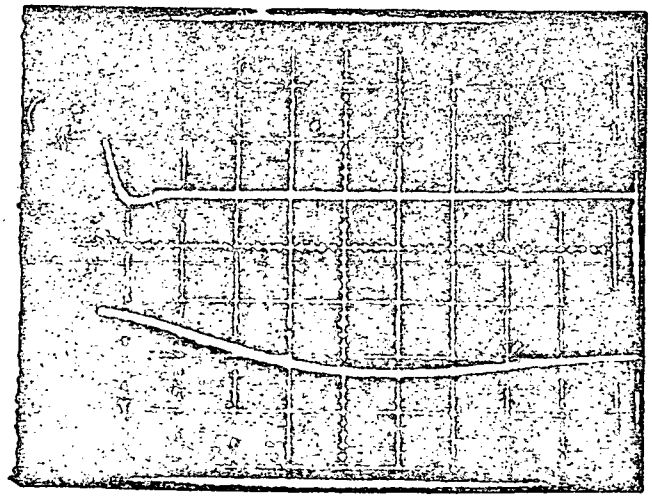
EE. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUND
5.10.6.1	+7V output pulsed	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	7.037	7.19

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-PRIMARY SIDE



(0.2A) CURRENT/DIV: Same A
(1V) VOLTAGE/DIV: "
(200uS) SWEEP RATE: "

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load on SMA +7V outputs is being removed - PRIMARY SIDE



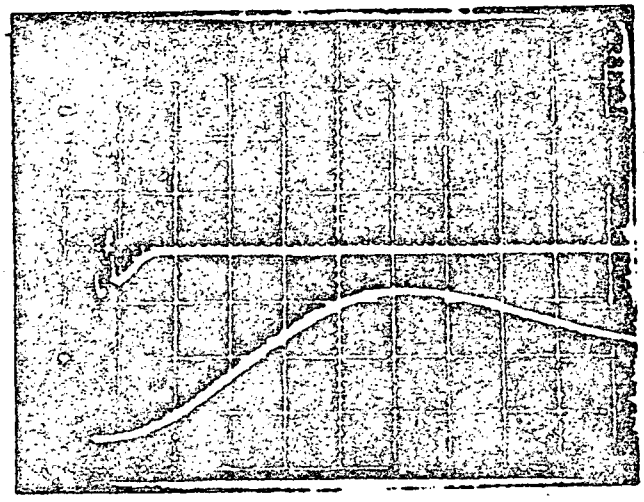
(0.2A) CURRENT/DIV: Same A
(1V) VOLTAGE/DIV: "
(200uS) SWEEP RATE: "

83

10.4 Performance test (continued)

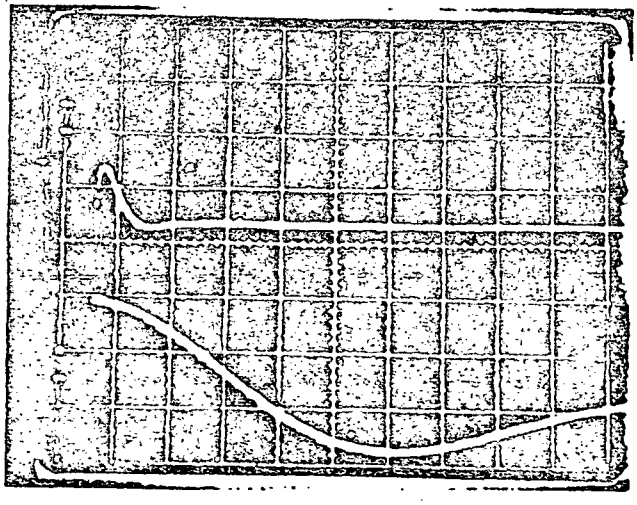
REF. PARA. DESCRIPTION

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-REDUNDANT SIDE



(0.2A) CURRENT/DIV: 0.2
(1V) VOLTAGE/DIV: 2 V/
(200uS) SWEEP RATE:

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load is being removed-REDUNDANT SIDE



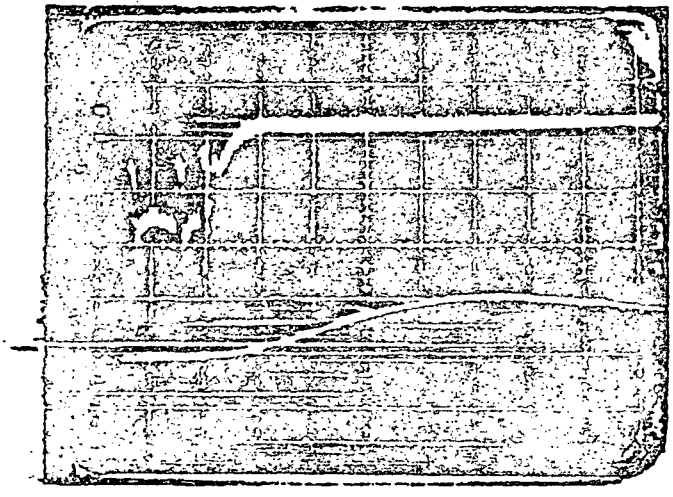
(0.2A) CURRENT/DIV: 0.2
(1V) VOLTAGE/DIV: 2 V/
(200uS) SWEEP RATE:

84

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDA
5.10.6.3	Input bus current	S26-1, S27-2 (S27-4 for RDT)		169.07	111.82
5.10.6.4	SMA +7V TM- pulsed	S26-5, S28-7 (S28-8 for RDT)		4.551	4.695
5.10.6.5	SMA +7V load current-pulsed	(S26-8, S34-5)		472.2 mA	483.5

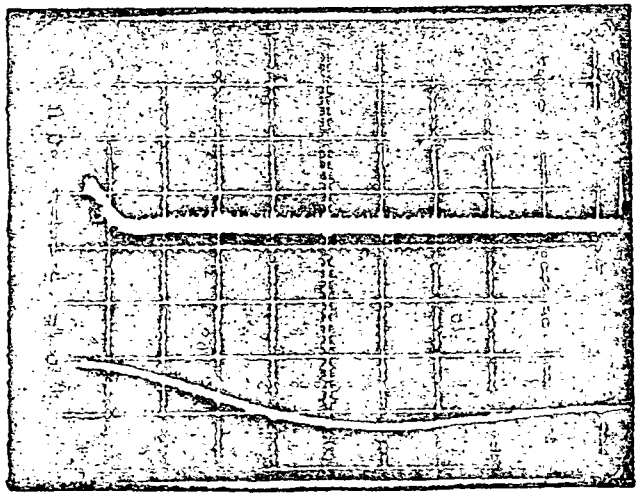
5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as SMA +7V output is being pulse-loaded-PRIMARY SIDE



(1A)* SMA CURRENT/DIV: .1V
(MA) BUS CURRENT/DIV: 200 mA
(200uS) SWEEP RATE: 200 μs

* Using 0.1Ω shunt and 100 mV/Div on scope

5. [illegible] transients induced on input bus current and SMA +7V load current as pulse-load is being removed-PRIMARY SIDE

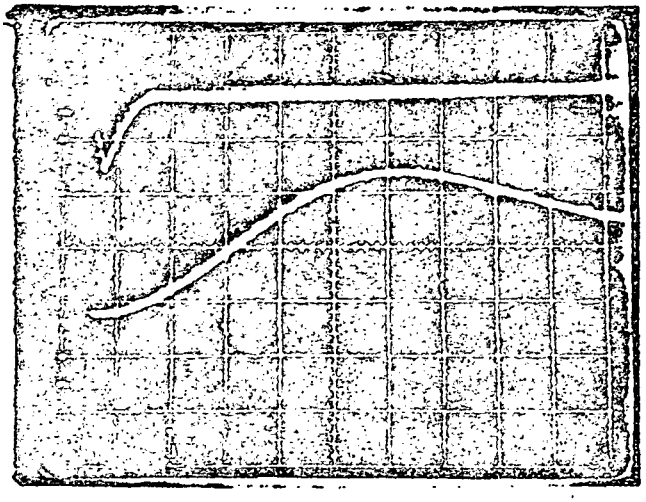


(1A)* SMA CURRENT/DIV: .1V
(MA) BUS CURRENT/DIV: 200mA
(200uS) SWEEP RATE: 200μsec

*Using 0.1Ω shunt and 100mV/Div on Scope

10.4 Performance test (continued)

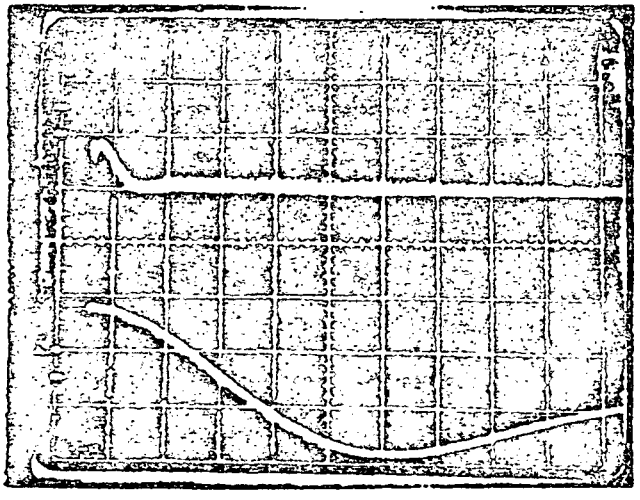
REF. PARA.	DESCRIPTION
5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as SMA + 7V output is being pulse loaded - REDUNDANT SIDE



(1A)* SMA CURRENT/DIV: 100mV/Div
(2A) BUS CURRENT/DIV 1.2 Amp.
(200uS) SWEEP RATE: 200μS/Div

*Using 0.1Ω shunt and 100 mV/Div on scope.

5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as pulse-load is removed - REDUNDANT SIDE



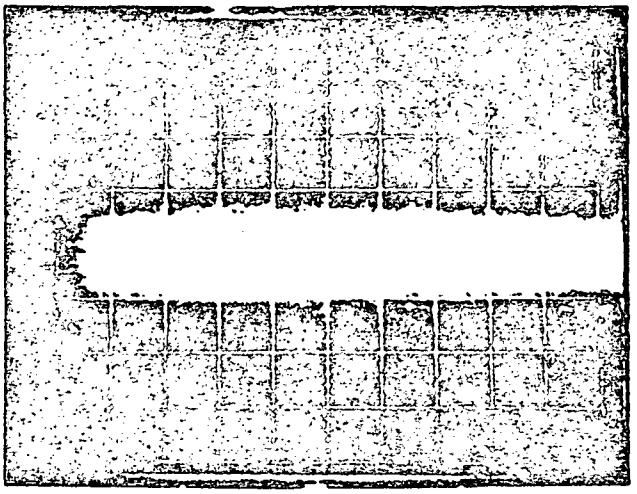
(1A)* SMA CURRENT/DIV: 100mV/Div
(2A) BUS CURRENT/DIV 1.2 A/Div
(200uS) SWEEP RATE: 200μS/Div

*Using 0.1Ω shunt and 100mV/Div on scope.

10.4 Performance test (continued)

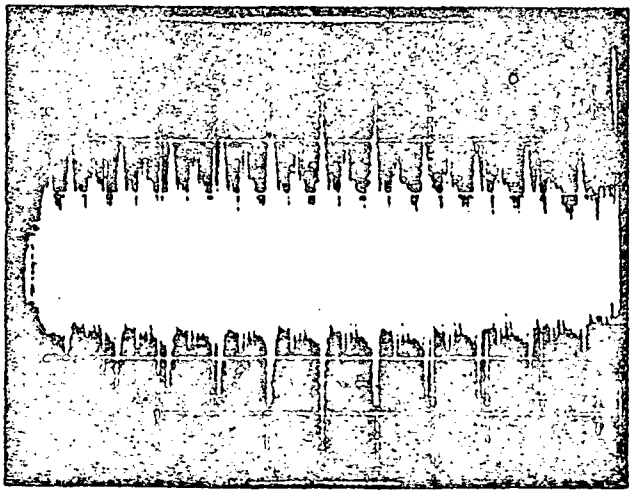
REF. PARA.	DESCRIPTION

5.10.7.1 Photograph of reflected input current ripple - PRIMARY SIDE



(1mA) CURRENT/DIV: 1ma A.C.
(10uS) SWEEP RATE: 10 usec

5.10.7.1 Photograph of reflected input current ripple - REDUNDANT SIDE



(1mA) CURRENT/DIV: 2 mA A.C.
(10uS) SWEEP RATE: 10 usec/DIV.

87

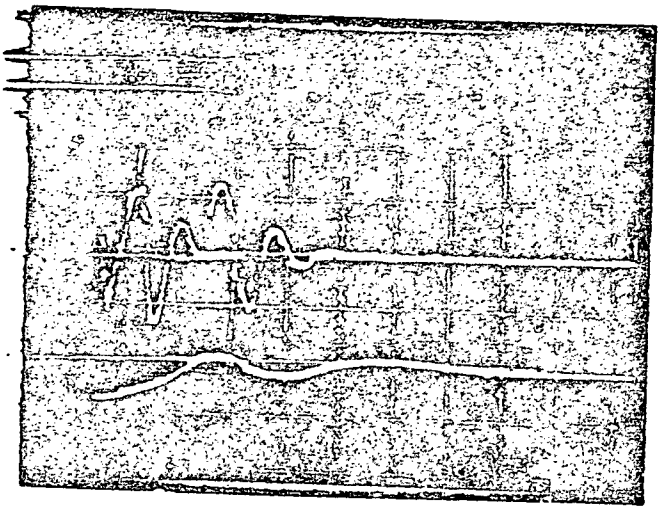
5.10.8.1.1 Input current - full load S26-1, S27-2 (S27-4 for RDT)

5.10.8.1.2 Input current w/o analog load Same

TEST S30

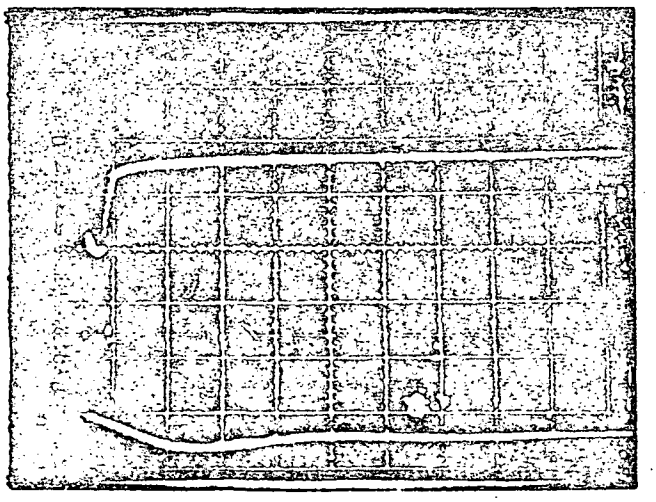
104.26 106
83.97 96

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage a analog output is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: Same
(1A) CURRENT/DIV: "
(500mS) SWEEP RATE: "

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is disabled - PRIMARY SIDE

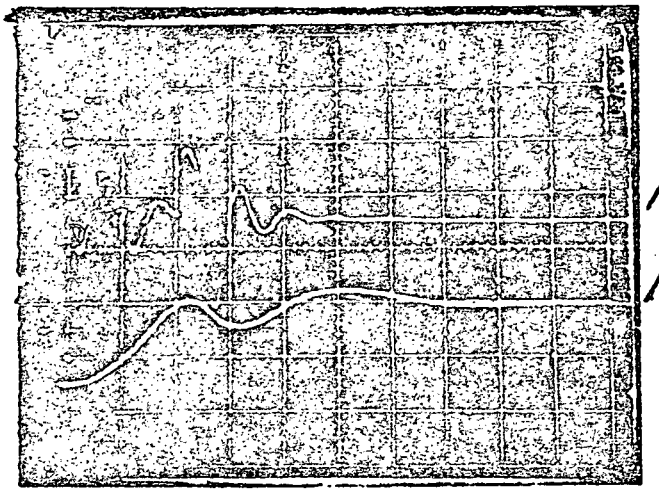


Same
(5V) VOLTAGE/DIV: "
(1A) CURRENT/DIV: "
(1mS) SWEEP RATE: "

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is enabled - REDUNDANT SIDE.



ANALOG OUTPUT V

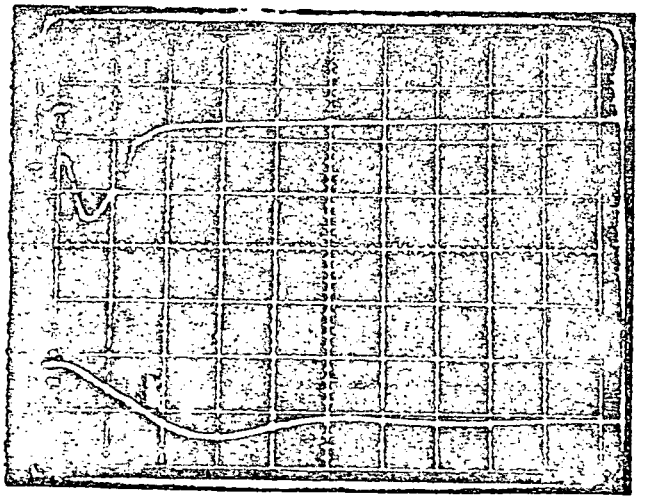
BUS I

(2V) VOLTAGE/DIV: 2 V/DI

(1A) CURRENT/DIV: 1A/DI

(500uS) SWEEP RATE: 500uS/

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is disabled - REDUNDANT SIDE.



ANALOG OUTPUT V

(5V) VOLTAGE/DIV: 2 V/DI

(1A) CURRENT/DIV: 1A/DI

(1mS) SWEEP RATE: 500uS/

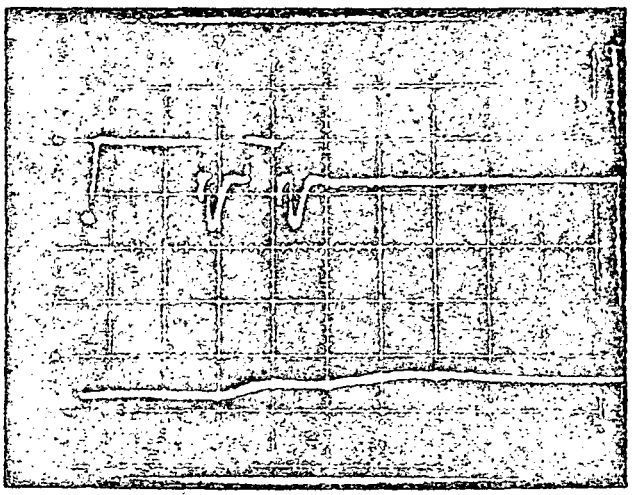
BUS I

89

10.4 Performance test (continued)

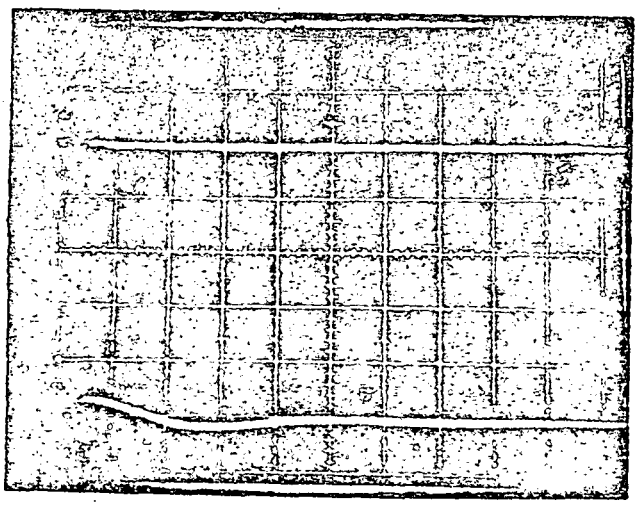
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDA
5.10.8.2.1	Input bus current w/o SMA +7V load	S26-1, S27-2 (S27-4 for RDT)		95.06 ✓	97.

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is enabled - PRIMARY SIDE.



(5V) VOLTAGE/DIV: 5V
(1A) CURRENT/DIV: 1A
(200uS) SWEEP RATE: 500μsec

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - PRIMARY SIDE.



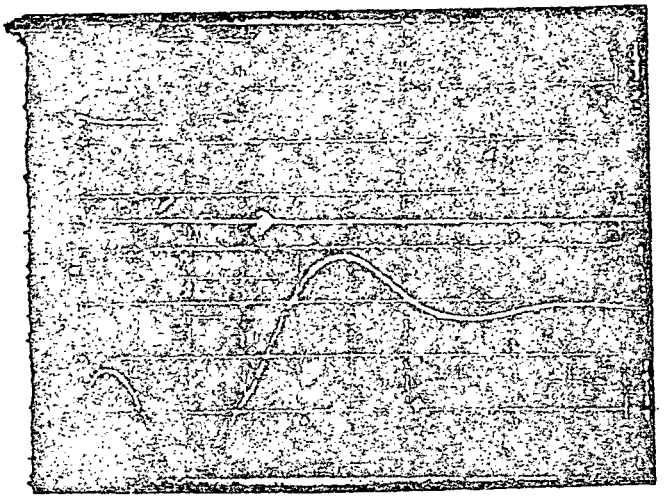
(2V) VOLTAGE/DIV: 5V
(1A) CURRENT/DIV: 1A
(2mS) SWEEP RATE: 500μsec

90

10.4 Performance test (continued)

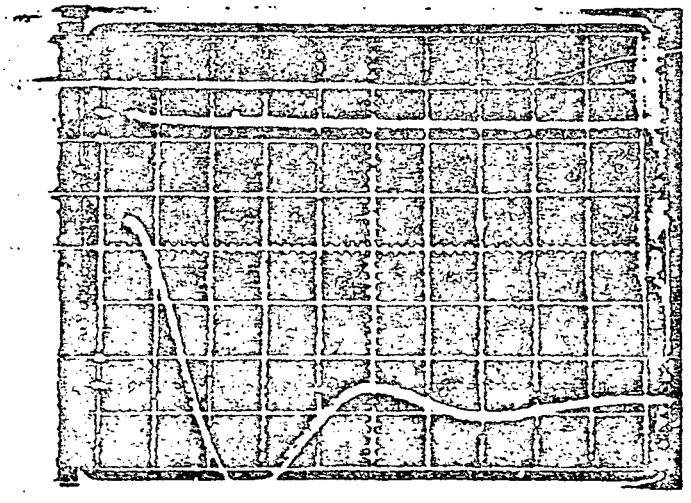
REF. PARA. DESCRIPTION

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7 output voltage as SMA +7V is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 2V/DIV
(1A) CURRENT/DIV: 0.2A/DIV
(20uS) SWEEP RATE: 500uS
500

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - REDUNDANT SIDE



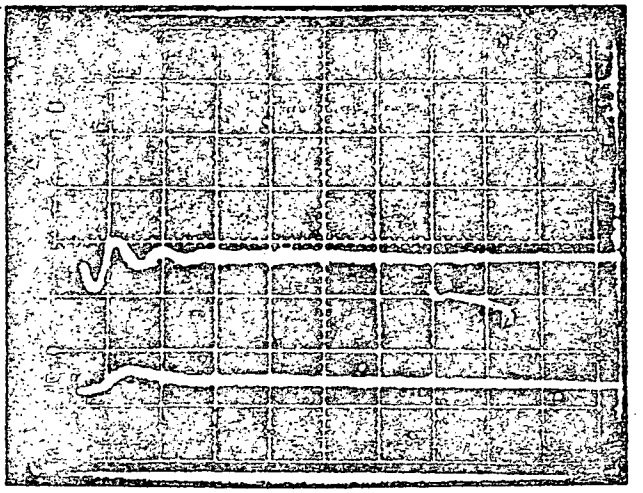
(2V) VOLTAGE/DIV: 2V/DIV
(1A) CURRENT/DIV: 0.2A/DIV
(2mS) SWEEP RATE: 500uS
500μs

91

10.4 Performance test (continued)

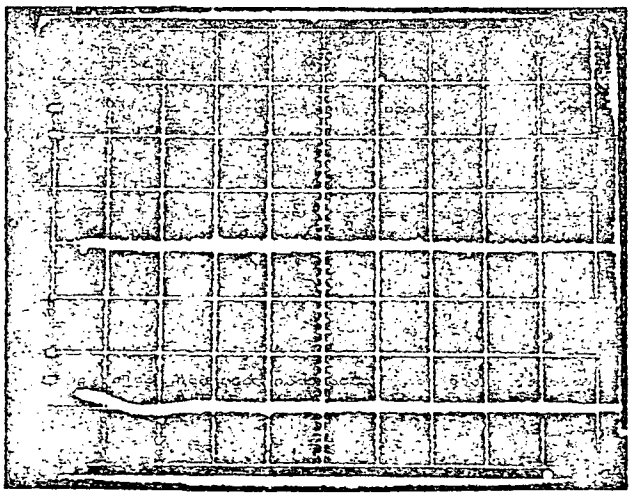
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUN
5.10.8.2.3	Input bus current w/o SMA ±29V load	S26-1, S27-2 (S27-4 for RDT)		101.18	103

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA +29V is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 5V
(0.5A) CURRENT/DIV: 0.5
(1mS) SWEEP RATE: 1msec

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is disabled - PRIMARY SIDE



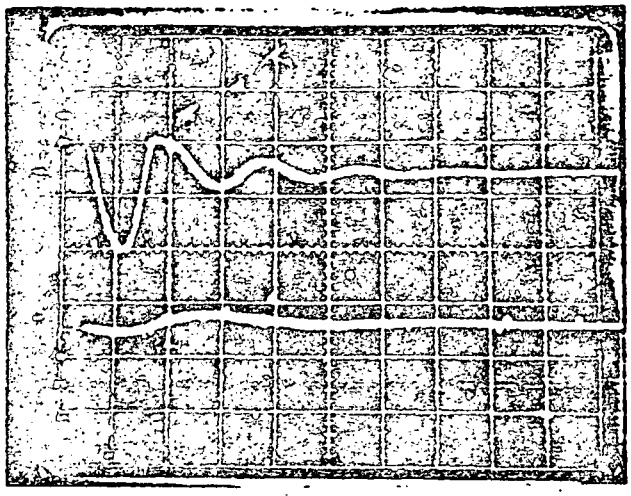
(2V) VOLTAGE/DIV: 5V
(0.5A) CURRENT/DIV: 0.5
(1mS) SWEEP RATE: 1msec

92

10.4 Performance test (continued)

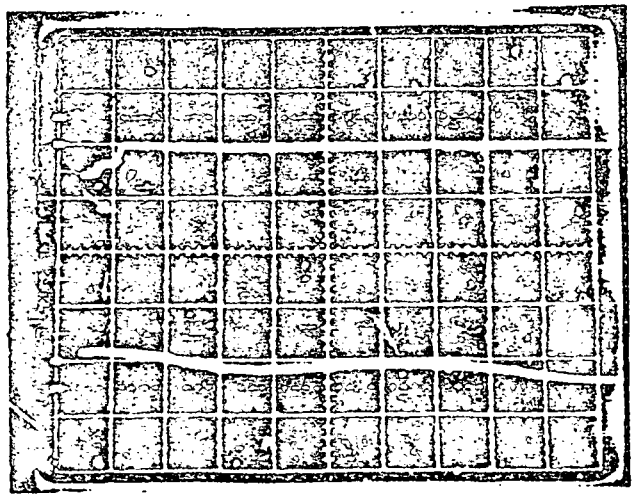
F. PARA.	DESCRIPTION

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2V/DIV
(0.5A) CURRENT/DIV: 0.5A
(1mS) SWEEP RATE: 500uS

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as ±29V is disabled - REDUNDANT SIDE



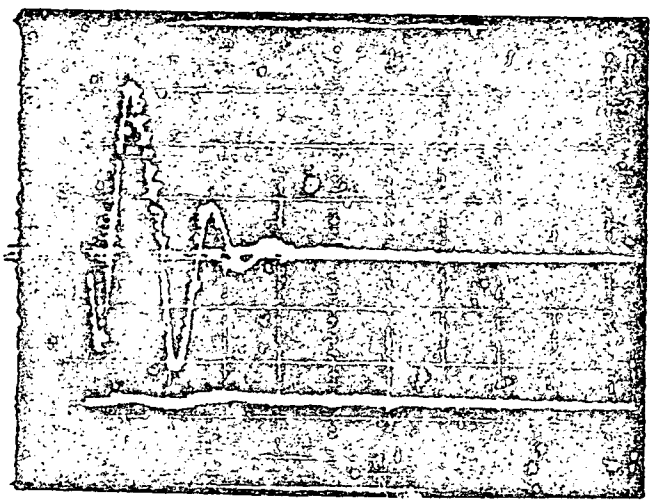
(2V) VOLTAGE/DIV: 2V
(0.5) CURRENT/DIV: 0.5A
(1mS) SWEEP RATE: 500uS

93

10.4 Performance test (continued)

ST. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	REDUNDA
5.10.8.3.1	Input bus current w/o CDVU load	S26-1, S27-2 (S27-4 for RDT)		102.73	104.91

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output



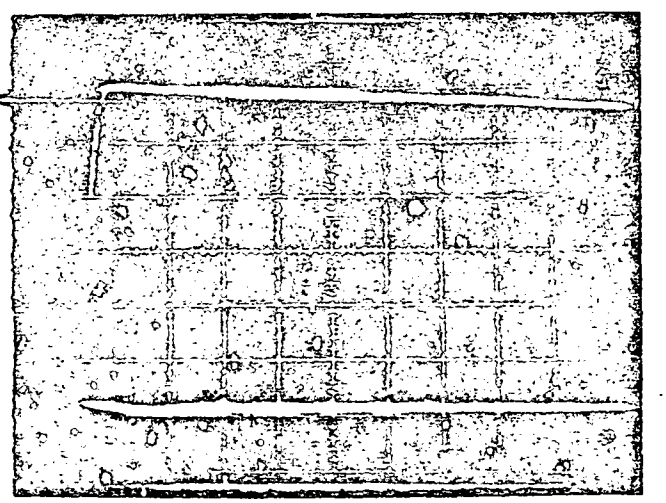
Same

(2V) VOLTAGE/DIV: ____

(0.5A) CURRENT/DIV: "

(1mS) SWEEP RATE: "

.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: Same

(0.5A) CURRENT/DIV: "

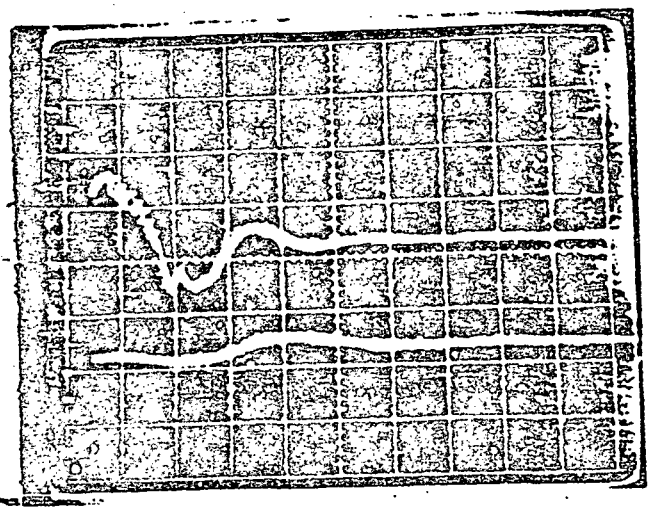
(1mS) SWEEP RATE: "

94

10.4 Performance test (continued)

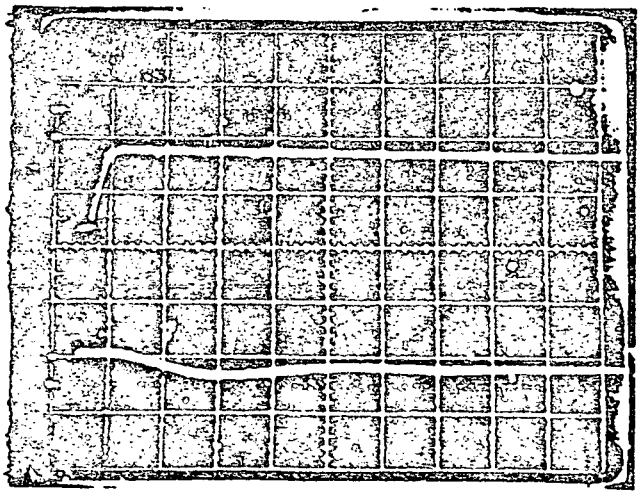
LP. PARA.	DESCRIPTION

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2V
(0.5A) CURRENT/DIV: 0.5A
(1mS) SWEEP RATE: 500μS/DIV.

5.10.8.3.2 Photograph as transients induced on input bus current and CDVU output voltage as CDVU is disabled - REDUNDANT SIDE



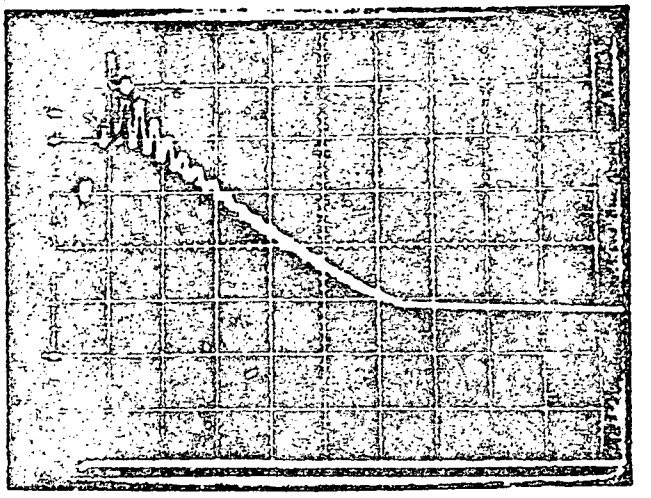
(2V) VOLTAGE/DIV: 2V
(0.5A) CURRENT/DIV: 0.5A
(1mS) SWEEP RATE: 500μS/DIV.

95

10.4 Performance test (continued)

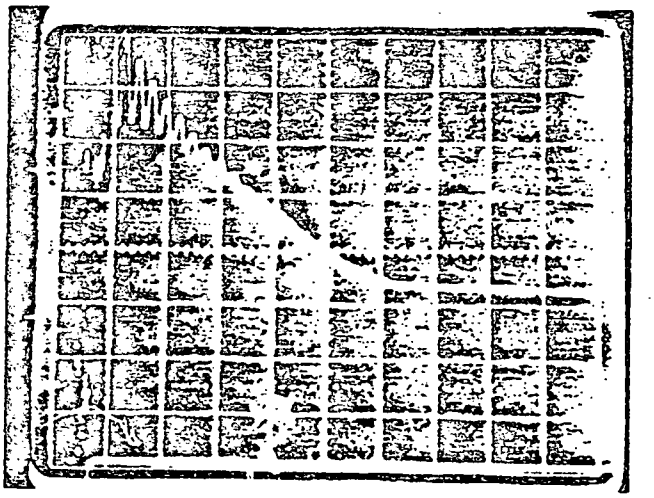
REF. PARA.	DESCRIPTION

5.10.9.1 Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - PRIMARY SIDE



Same
(5V) VOLTAGE/DIV: "
(5A) CURRENT/DIV: "
(500uS) SWEEP RATE: "

Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - REDUNDANT SIDE



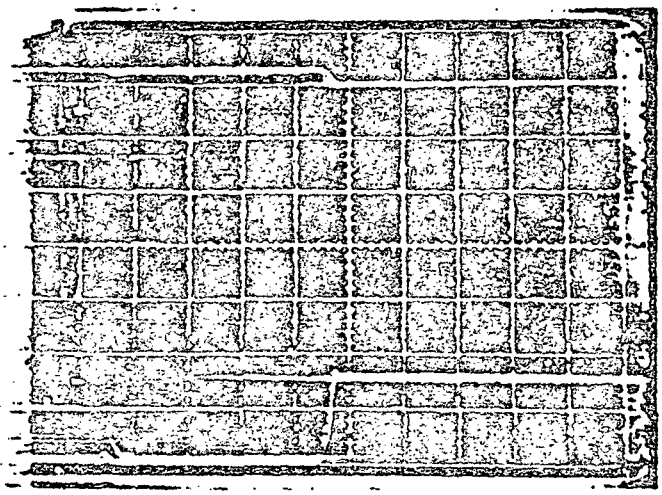
(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(500uS) SWEEP RATE: 500uS

96

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.9.2	UUT stays off when bus is reapplied.	S1-ON (S2-ON for RDT)	--	✓	✓

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - PRIMARY SIDE



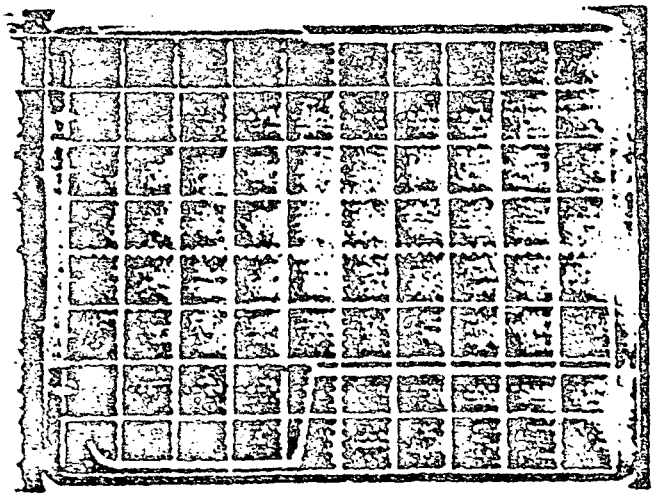
Same

(5V) VOLTAGE/DIV: "

(5A) CURRENT/DIV: "

(100mS) SWEEP RATE: "

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V

(5A) CURRENT/DIV: 5A.

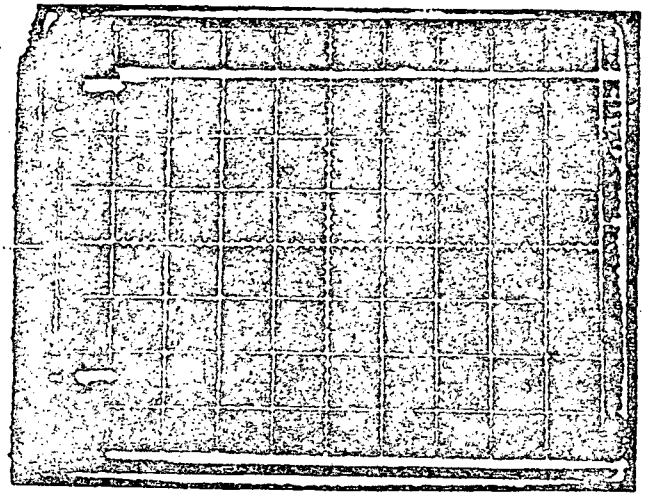
(100mS) SWEEP RATE: 100mS

97

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - PRIMARY SIDE



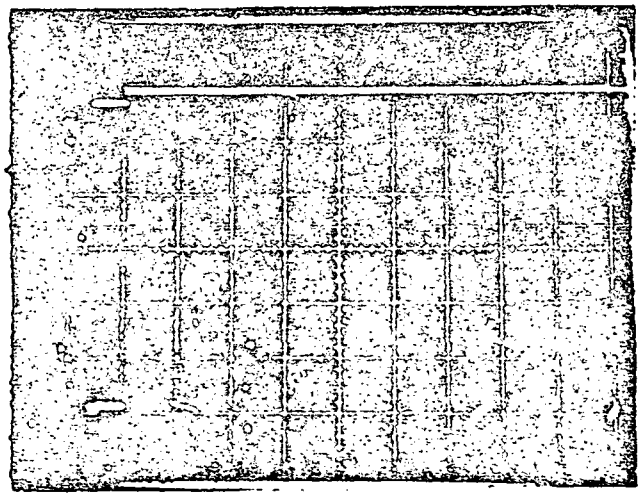
Same

(5V) VOLTAGE/DIV: 1 1

(5A) CURRENT/DIV: 1 1

(10mS) SWEEP RATE: 1 1

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V

(5A) CURRENT/DIV: 5A

(10mS) SWEEP RATE: 10mSec

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	PRIMARY	REDUND
5.10.9.5	Record	S27-2 (S27-4)		107.08	107.1
5.10.9.6	Record	(S27-4 (S27-2)		87.35 ✓	9.4
	Record	S27-2 (S27-4)			
				26.29	886
5.10.9.7	Record that UUT turns on.	(Checkmark)		✓	✓
5.10.10.1	Input bus current AFTER it reads ~ 17A AND input bus voltage reads ~ 21V.	S26-1, S27-2 (S27-4 for RDT)		120.50	120.3
5.10.10.2	Input bus voltage with 17.0A load	S26-1, S27-1 (S27-3 for RDT)		35.03	34.9
5.10.10.3	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3356	3379
5.10.10.4	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		DNA	DNA
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		DNA	DNA
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		DNA	DNA
5.10.10.5	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.012	3.04
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.05	35.0
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		108.97	110.0
5.10.10.6	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.526	2.54
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.07	35.0
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		94.72	96.0
5.10.10.7	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.010	2.0
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		34.96	35.1
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		83.26	77.1

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.10.8	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.497	1.4965
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.01	35.02
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		63.26mV	59.88
5.10.10.9	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.0092	0.9392
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.00	35.02
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		41.22mV	42.46
5.10.10.10	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		.5986V	0.4824
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		34.99V	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		32.06mV	27.95mV
5.10.10.11	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		.2215	0.2360
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		34.99	35.02
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		25.31	25.88mV
5.10.10.12	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		-220.7mV	-242.2
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.03	35.03
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		13.588mV	11.095mV
5.10.11.1	Band 1+ output voltage	S26-1, S27-5		24.13	24.36
5.10.11.2	Band 1- output voltage	S27-6		-24.33	-24.15
5.10.11.3	2+	S27-7		24.40	23.80
5.10.11.4	2-	S27-8		-24.40	-24.30
5.10.11.5	3+	S27-9		25.91	24.31
5.10.11.6	3-	S27-10		-23.36	-23.98
5.10.11.7	Band 4+ output voltage	S26-1, S27-11		24.75	24.63

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DWH SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDAN
5.10.11.8	Band 4- output voltage	S26-1, S27-12		-24.28	-24.25
5.10.11.9	5,7+	S26-2, S27-1		23.35	23.92
5.10.11.10	5,7-	S27-2		-23.30	-23.68
5.10.11.11	6+	S27-3		22.90	23.57
5.10.11.12	Band 6-	S27-4		-23.56	-23.87
5.10.11.13	SMA Htr +	S27-5		24.60	25.03
5.10.11.14	Htr -	S27-6		-24.60	-24.90
5.10.11.15	+7V	S27-7		11.206V	N/A
5.10.11	+7V	(S27-8 For RDT)		N/A	11.432V
5.10.11	+29V	S27-9		31.24V	N/A
5.10.11	+29V	(S27-11 For RDT)		N/A	31.42V
5.10.11	-29V	S27-10		-31.50	N/A
	SMA -29V	S26-2, (S27-12 for RDT)		N/A	-31.28V
5.10.11.18	Radiometer	S26-3, S27-2		9.442	9.313
5.10.11.19	CDVU	S27-3		9.647	9.547
5.10.11.20	Analog +	S27-4		26.38	26.66
5.10.11.21	Analog -	S27-5		-24.97	-24.76
5.10.11.22	Electromech.	S27-6		44.55	44.07
5.10.11.23	Outgas	S27-7		103.08V	101.31
5.10.11.24	Parasitic	S27-9		30.87V	N/A
	Parasitic output voltage	S26-3, (S27-10 for RDT)		N/A	31.64V
5.10.11.25	Band 1+ TM output	S26-4, S28-5		4.602	4.527
5.10.11.26	1-	S28-6		4.429	4.395
5.10.11.27	2+	S28-7		4.636	4.336
5.10.11.28	2-	S28-8		4.420	4.399
5.10.11.29	3+	S28-9		4.696	4.410
5.10.11.30	3-	S28-10		4.256	4.327
5.10.11.31	4+	S28-11		4.492	4.475
5.10.11.32	4-	S26-4, S28-12		4.445	4.414
5.10.11.33	Band 5,7+ TM output	S26-5, S28-1		4.262	4.380

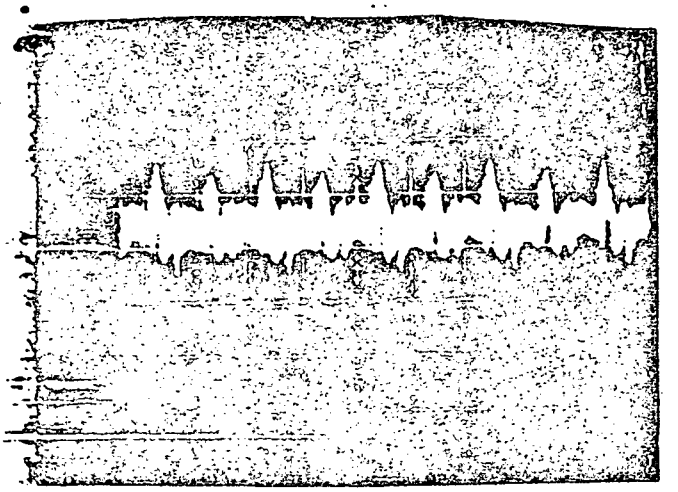
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDA
5.10.11.34	Band 5,7- TM output	S26-5, S28-2		4.247	4.314
5.10.11.35	6+	S28-3		4.142	4.273
5.10.11.36	Band 6-	S28-4		4.302	4.360
5.10.11.37	SMA Htr +	S28-5		4.476	4.562
5.10.11.38	Htr -	S28-6		4.442	4.503
5.10.11.39	+7V	S28-7 (S28-8 for RDT)		6.902	7.034
5.10.11.40	+29V	S28-9 (S28-11 for RDT)		4.258	4.312
5.10.11.41	SMA -29V	S26-5, S28-10 (S28-12 for RDT)		3.822	3.781
5.10.11.42	Radiometer	S26-6, S28-2		5.114	5.264
5.10.11.43	CDVU	S28-3		5.343	5.287
5.10.11.44	Analog +	S28-4		4.677	4.723
5.10.11.45	Analog -	S28-5		4.456	4.310
5.10.11.46	Electromech.	S28-6		5.426	5.387
5.10.11.47	Outgas - TM output	S26-6, S28-7		5.129	5.041
5.10.12.1	Bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.02	35.03
5.10.12.2	Input bus current	S26-1, S27-2 (S27-4 for RDT)		38.07 mA	36.13
5.10.12.3	SMA Htr + output voltage	S26-2, S27-5		21.29	21.23
5.10.12.4	Htr + ripple	Seen on Scope	<630 mV pk-pk	40	80
5.10.12.5	Htr - voltage	S26-2, S27-6		-22.02	-22.56
5.10.12.6	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	20	20
5.10.12.7	CDVU voltage	S26-3, S27-3		7.425	7.630
5.10.12.8	CDVU ripple	Seen on Scope	<240 mV pk-pk	30	40
5.10.12.9	Outgas - output voltage	S26-3, S27-7		86.43	87.54
5.10.12.10	Outgas - output ripple	Seen on Scope	2.50V pk-pk	300 mV	350 mV
5.10.12.11	Parasitic output voltage	S26-3, S27-9 (S27-10 for RDT)		29.85	30.49
5.10.12.12	Parasitic output ripple	Seen on Scope	<900 mV pk-pk	100 mV	140 mV

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	REDUND.
5.10.13.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		682.5mv	707.
5.10.13.2	SMA Htr + output	S26-5, S28-5		3.988	3.99
5.10.13.3	SMA Htr -	S26-5, S28-6		3.992	4.10
5.10.13.4	CDVU	S26-6, S28-3		4.166	4.27
5.10.13.5	Outgas output telemetry	S26-6, S28-7		4.313	4.39

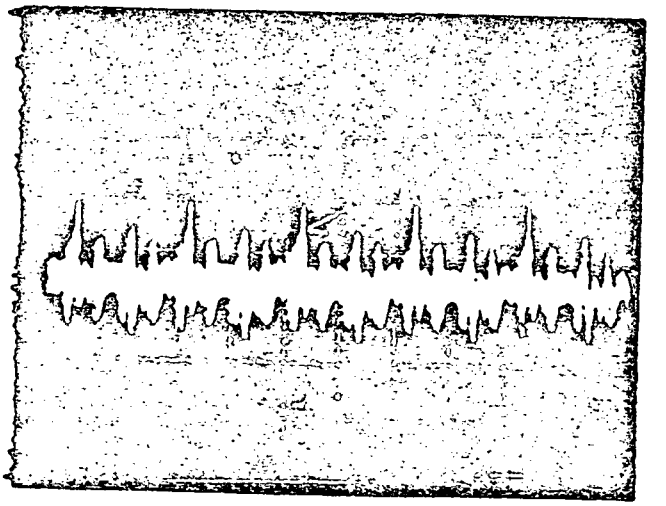
5.10.14.1 Photograph of reflected input current ripple in outgas mode — PRIMARY SIDE



(2mA) CURRENT/DIV: 5 ma A.C.

(10uS) SWEEP RATE: 5 usec

5.10.14.1 Photograph of reflected input current ripple in outgas mode — REDUNDANT SIDE



(2mA) CURRENT/DIV: 5mA A.C.

(10uS) SWEEP RATE: 5 usec

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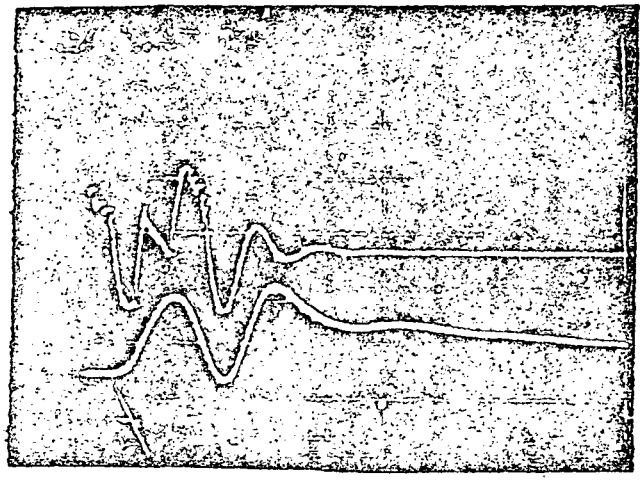
10.4 Performance test (continued)

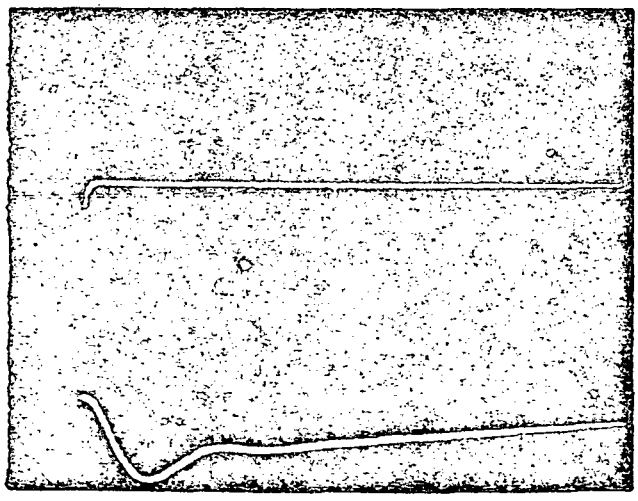
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDA
5.10.15.1.1	Input current with CDVU off.	S26-1, S27-2 (S27-4 for RDT)		36.33 mV.	34.25

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2 V/DIV
(200mA) CURRENT/DIV: 100mA/DIV
(1mS) SWEEP RATE: 1mSec/D

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled - PRIMARY SIDE

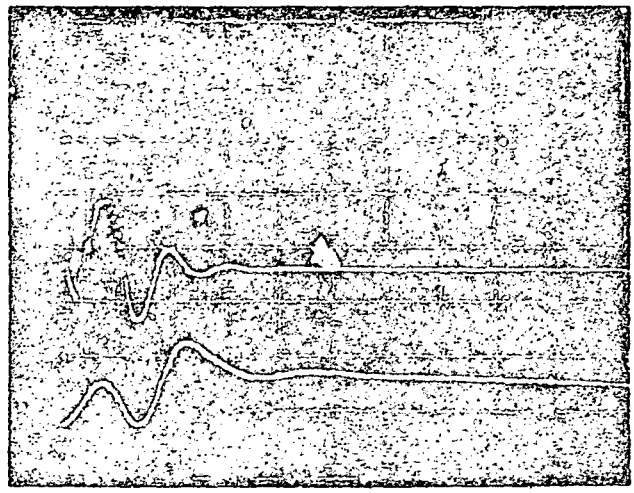


(2V) VOLTAGE/DIV: 2 V/DIV
(200mA) CURRENT/DIV: 100mA/DIV
(2mS) SWEEP RATE: 1mSec/DIV

10.4 Performance test (continued)

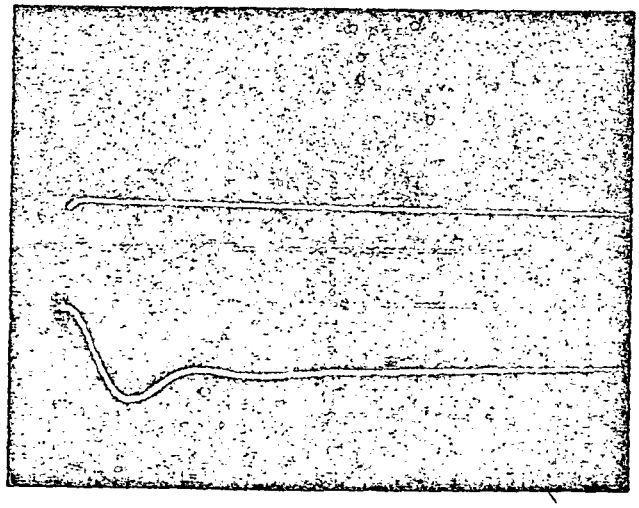
REF. PARA.	DESCRIPTION

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled — REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2V/DIV.
(200mA) CURRENT/DIV: 200mA.
(1mS) SWEEP RATE: 1mS

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled — REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2V/DIV.
(200mA) CURRENT/DIV: 200mA.
(2mS) SWEEP RATE: 1mS

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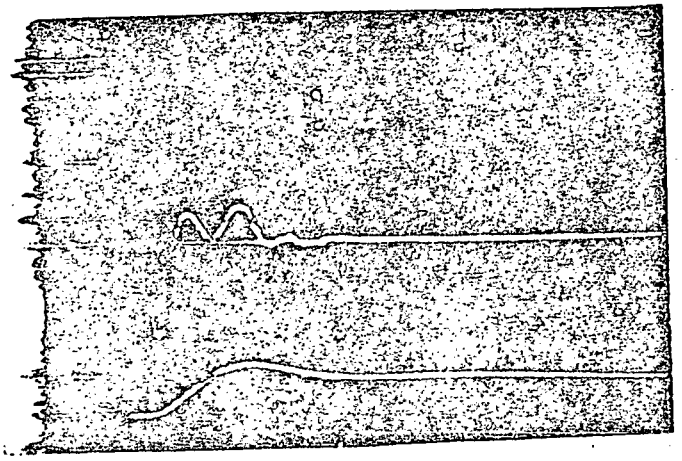
10.4 Performance test (continued)

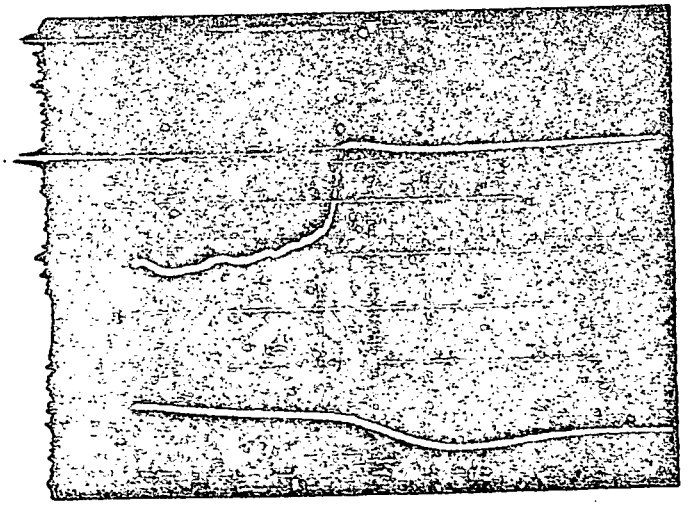
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.2.1	Input bus current with outgas disabled	S26-1, S27-2 (S27-4 for EDT)		12.919mV	13.407

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V/DIV.
(2A) CURRENT/DIV: 2Amp/DIV
(1mS) SWEEP RATE: 500μSec/

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V/DIV.
(2A) CURRENT/DIV: 2Amp/DIV.
(2mS) SWEEP RATE: 500μSec/DIV

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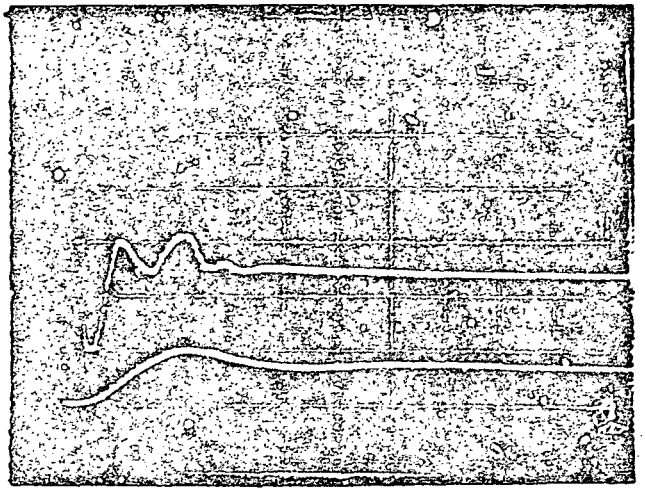
10.4 Performance test (continued)

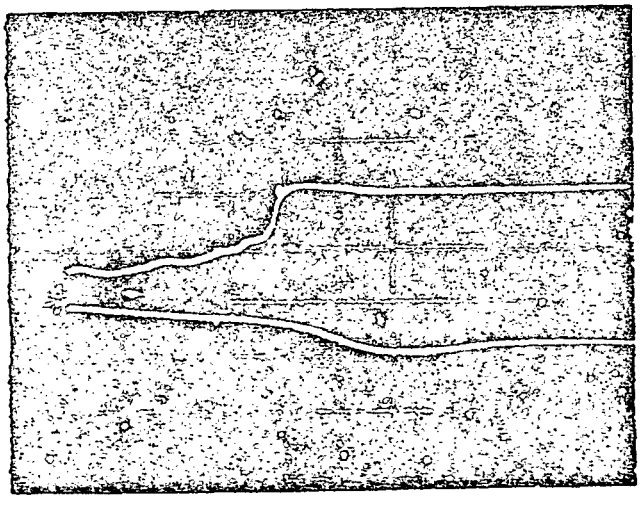
VF. PARA.	DESCRIPTION

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2 Amps
(500uS) SWEEP RATE: 500 μSec

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2 Amps.
(1mS) SWEEP RATE: 500 μSec

10.4 Performance Test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITION	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.16.1	BPS voltage	S26-1, S27-1 (S27-3 for RDT)		35.03V (19)	35.0
5.10.16.2	BPS current	S26-1, S27-2 (S27-4 for RDT)		15.240A (50)	15.7
5.10.16.3	SMA Htr +output voltage	S26-2, S27-5		21.62V (11)	22.04
5.10.16.4	SMA Htr +load current	S26-8, S34-1		46.62A (79)	47.5
5.10.16.5	SMA Htr -output voltage	S26-2, S27-6		-22.01 (14)	-22.4
5.10.16.6	SMA Htr -load current	S26-8, S34-2		-8.690 (79)	-8.86
5.10.16.7	CDVU output voltage	S26-3, S27-3		7.421 (10)	7.628
5.10.16.8	CDVU load current	S26-8, S34-10		265.7 (47)	233.0
5.10.16.9	Parasitic output voltage	S26-3, S27-9 (S27-10)		30.54V (27)	31.19
5.10.16.10	Parasitic load current	S26-8, S34-7		142.34 (46)	145.36
5.10.16.11	Input power (5.10.16.1 x 5.10.16.2)			533.86	55.32
5.10.16.12	Output power ((5.10.16.3 x 5.10.16.4) + (5.10.16.5 x 5.10.16.6) + (5.10.15.7 x 5.10.16.8) + (5.10.16.9 x 5.10.16.10))	(Primary) (Redundant)		16.965	17.73
5.10.16.13	Efficiency ((5.10.16.12) ÷ (5.10.16.11)) x 100%			31.8%	32.1%

10.4 Performance test (continued)

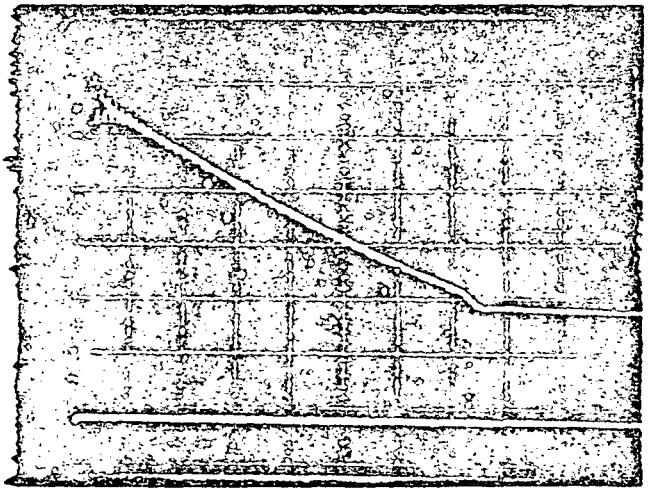
5.10.17.1 Photograph of input bus current and input bus voltage as is disable - PRIMARY SIDE

Bus Voltage

(5V) VOLTAGE/DIV: 5V/DIV.
(2A) CURRENT/DIV: 2Amp/DIV
(1mS) SWEEP RATE: 1mSec/DIV.

Bus I.

5.10.17.1 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE



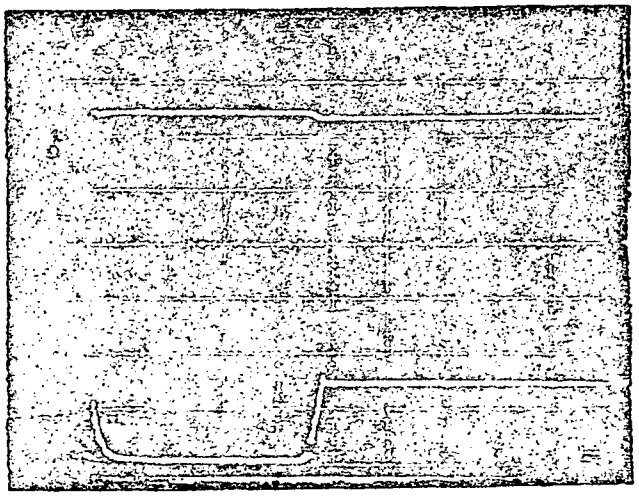
(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2Amp
(1mS) SWEEP RATE: 1mS

10.4 Performance test (continued)

5.10.17.2 Unit stays off (check)

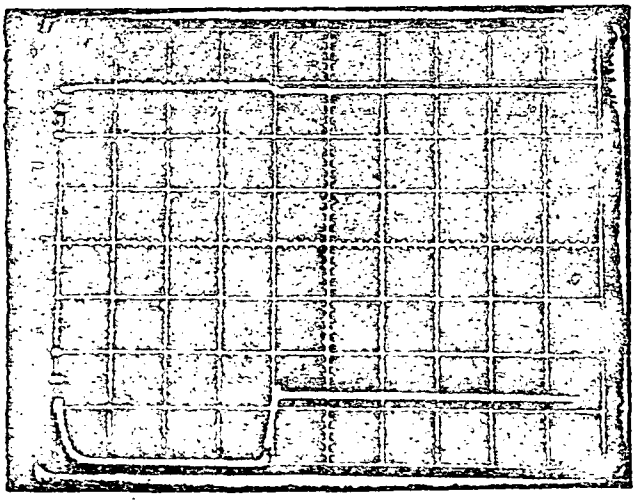
Primary	Redundant
✓	✓

5.10.17.3 Photograph of input bus current and input bus voltage as is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 5.0V/DIV.
(2A) CURRENT/DIV: 2A/DIV
(100mS) SWEEP RATE: 100mSec/

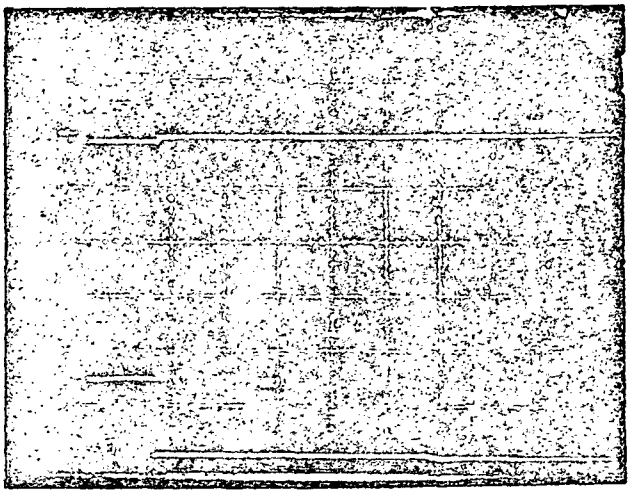
5.10.17.3 Photograph of input bus current and input bus voltage as as is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 5.0V
(2A) CURRENT/DIV: 2A
(100mS) SWEEP RATE: 100mS

10.4 Performance test (continued)

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - PRIMARY SIDE

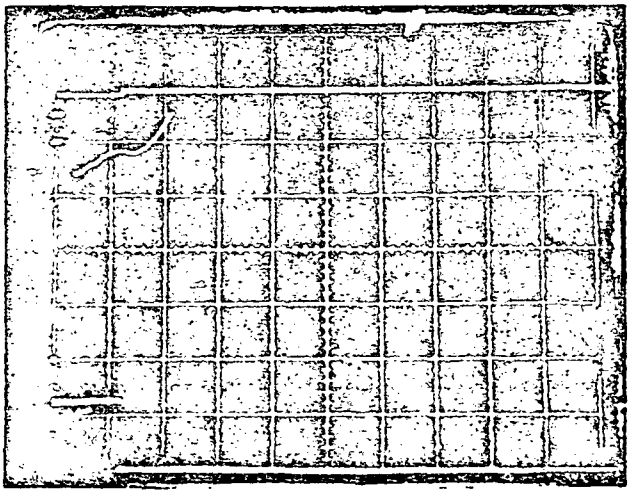


BUS V

(2V) VOLTAGE/DIV: 5V/DIV
(2A) CURRENT/DIV: 2Amps/DIV
(10mS) SWEEP RATE: 5mSec/D

BUS I

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE

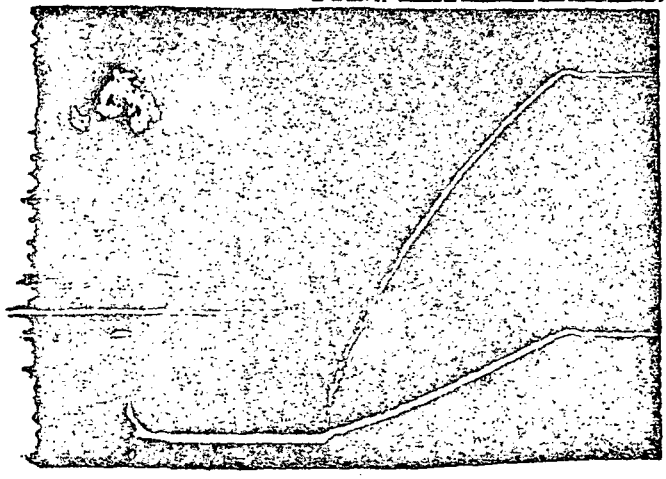


(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 5mS

10.4 Performance test (continued)

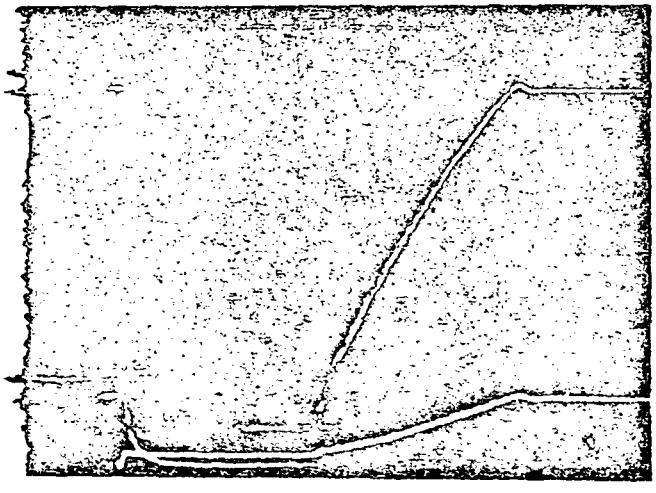
T. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.17.5	Record that UUT operates correctly.		(checkmark)	✓	✓

5.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V/DIV
(5A) CURRENT/DIV: 5Amps/DIV.
(20mS) SWEEP RATE: 10mSec/DIV.

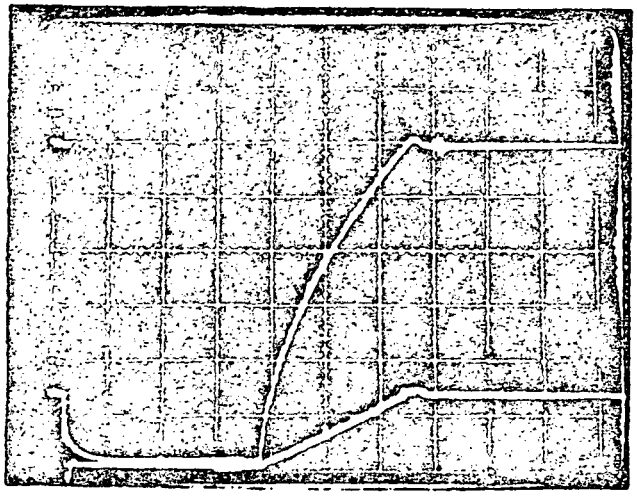
5.10.18.2 Photograph of input bus current and parasitic output voltage as parasitic enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V/DIV
(5A) CURRENT/DIV: 5Amps/DIV
(20mS) SWEEP RATE: 10mSec/DIV.

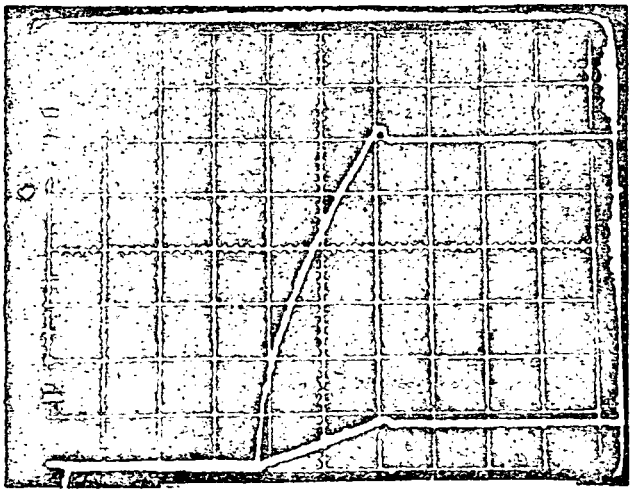
10.4 Performance test (continued)

.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 10mS

.10.18.2 Photograph of input bus current and MUX output voltage as parasitic enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5v) Volts/Div: 5V
(5A) Current/Div: 5A
(20mS) Sweep Rate: 10mS

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	OVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.18.4	Undervoltage Trip Point (ON/OFF)	S26-1, S27-1 (S27-3 for RDT)	18.0 ±1.50V	18.074 V	18.02
5.10.18.5	UUT stays OFF			✓	✓
5.10.18.6	Undervoltage Trip Point (OFF/ON)	S26-1, S27-1 (S27-3 for RDT)	19.0 ±1.50V	18.911 V	18.875
5.10.18.7	Overvoltage Trip Point	S26-1, S27-1 (S27-3 for RDT)	38.0 ± 2V	38.54 V	38.00 V
5.10.18.8	UUT stays OFF			✓	✓
5.10.18.9	UUT turns ON			✓	✓

2/3/82
DATE

ECCARS / [illegible]
TESTER(S)

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10.4 Performance test - Long Form

PROTOFLIGHT NA, OR FLIGHT ✓, S/N 004 TEMPERATURE: +131°F
IN-PROCESS NA, QUAL NA, OR ACCEPTANCE ✓
TESTING PHASE FINAL HOT - LONG FORM LINE VOLTAGE: 23.0 VOLTS

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.1.1	Calibrate cmd gen	--	--	✓	✓
5.10.2.1	Input bus current	S26-1, S27-2 (S27-4 for redundant)		0.220mV	0.217mV
5.10.2.2	MUX output voltage	S26-3, S27-1	30.0 ±0.90V	30.40V	30.01V
5.10.2.3	MUX load current	S26-3, S27-12	3.55 ±0.40A	33.02mV	32.63mV

The rest of Section 5.10.2 requires only checking voltage - indicate by checkmarks.

5.10.2.4.1	B1 + output voltage	S26-1, S27-5		✓	✓
5.10.2.4.2	B1 -	S27-6		✓	✓
5.10.2.4.3	B1 -	S27-5		✓	✓
5.10.2.4.4	B1 +	S27-7		✓	✓
5.10.2.5.1	B2 +	S27-7		✓	✓
5.10.2.5.2	B2 -	S27-8		✓	✓
5.10.2.5.3	B2 -	S27-8		✓	✓
5.10.2.5.4	B2 +	S27-7		✓	✓
5.10.2.6.1	B3 +	S27-9		✓	✓
5.10.2.6.2	B3 -	S27-10		✓	✓
5.10.2.6.3	B3 -	S27-10		✓	✓
5.10.2.6.4	B3 +	S27-9		✓	✓
5.10.2.7.1	B4 +	S27-11		✓	✓
5.10.2.7.2	B4 -	S27-12		✓	✓
5.10.2.7.3	B4 -	S27-12		✓	✓
5.10.2.7.4	B4 +	S26-1, S27-11		✓	✓
5.10.2.8.1	B5,7+	S26-2, S27-1		✓	✓
5.10.2.8.2	B5,7-	S27-2		✓	✓
5.10.2.8.3	B5,7-	S27-2		✓	✓
5.10.2.8.4	B5,7+	S27-1		✓	✓
5.10.2.9.1	B6 +	S27-3		✓	✓
5.10.2.9.2	B6 - output voltage	S26-2, S27-4		✓	✓

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDA
5.10.2.9.3	B6 - output voltage	S26-2, S27-4		✓	✓
5.10.2.9.4	B6 + output voltage	S26-2, S27-3		✓	✓
5.10.2,10.1	SMA HTR + output voltage	S27-5		✓	✓
5.10.2.10.2	-	S27-6		✓	✓
5.10.2.10.3	-	S27-6		✓	✓
5.10.2.10.4	-	S27-5		✓	✓
5.10.2.11.1	-7V	S26-2, S27-7		✓	
5.10.2.11.2	-7V	(S27-8 for RDT)			✓
5.10.2.12.1	-29V	S26-2, S27-9		✓	
		(S27-11 for RDT)			✓
5.10.2.12.2	-29V	S26-2, S27-10		✓	
		(S27-12 for RDT)			✓
5.10.2.12.3	-29V	S26-2, S27-10		✓	✓
5.10.2.12.4	SMA HTR -29V	S26-2, S27-9		✓	✓
5.10.2.13.1	Radiometer	S26-3, S27-2		✓	✓
5.10.2.13.2	Radiometer	S27-2		✓	✓
5.10.2.14.1	CDVU	S27-3		✓	✓
5.10.2.14.2	CDVU	S27-3		✓	✓
5.10.2.15.1	Analog +	S27-4		✓	✓
5.10.2.15.2	Analog -	S27-5		✓	✓
5.10.2.15.3	Analog -	S27-5		✓	✓
5.10.2.15.4	Analog +	S27-4		✓	✓
5.10.2.16.1	Electromech.	S27-6		✓	✓
5.10.2.16.2	Electromech.	S27-6		✓	✓
5.10.2.17.1	Outgas output voltage	S26-3, S27-7		✓	✓
5.10.3.1	Bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.03 (49)	23.0
5.10.3.2	MUX load current	S26-3, S27-12	4.130 ±0.025A	41.30 mV	41.
5.10.3.3	Bus current	S26-1, S27-2 (S27-4 for RDT)		G. Below 161.98 ~~143.98~~ (50)	159
5.10.3.3.2	BPS Voltage	S26-1, S27-1 S27-3)		23.04	23.04
5.10.3.3.3	BPS Current	S26-1, S27-2 (S27-4)		143.05	159.44
5.10.3.3.4	MUX Current	S26-3, S27-12		41.29	41.31

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY		REDUNT
5.10.3.4.1	B1 + output voltage	S26-1, S27-5	20.50 ±2.50V	20.97	(1)	20.1
5.10.3.4.2	B1 + output ripple	Look on Scope	<600 mV pk-pk	40		40m
5.10.3.4.3	B1 - output voltage	S26-1, S27-6	-20.50 ±2.50V	-20.93	(2)	-20.6
5.10.3.4.4	B1 - output ripple	Look on Scope	<600 mV pk-pk	40		20m
5.10.3.5.1	B2 + output voltage	S26-1, S27-7	20.50 ±2.50V	20.91	(3)	20.7
5.10.3.5.2	B2 + output ripple	Look on Scope	<600 mV pk-pk	30		20m
5.10.3.5.3	B2 - output voltage	S26-1, S27-8	-20.50 ±2.50V	-20.95	(4)	-20.
5.10.3.5.4	B2 - output ripple	Seen on Scope	<600 mV pk-pk	40		15
5.10.3.6.1	B3 + output voltage	S26-1, S27-9	20.50 ±2.50V	21.02	(5)	20.7
5.10.3.6.2	B3 + output ripple	Seen on Scope	<600 mV pk-pk	30		20m
5.10.3.6.3	B3 - output voltage	S26-1, S27-10	-20.50 ±2.50V	-20.95	(6)	-20.5
5.10.3.6.4	B3 - output ripple	Seen on Scope	<600 mV pk-pk	30		20m
5.10.3.7.1	B4 + output voltage	S26-1, S27-11	20.50 ±2.50V	20.91	(7)	20.5
5.10.3.7.2	B4 + output ripple	Seen on Scope	<600 mV pk-pk	30		20m
5.10.3.7.3	B4 - output voltage	S26-1, S27-12	-20.50 ±2.50V	-20.94	(8)	-20.6
5.10.3.7.4	B4 - output ripple	Seen on Scope	<600 mV pk-pk	30		20m
5.10.3.8.1	B5,7 + voltage	S26-2, S27-1	20.50 ±2.50V	20.32	(9)	20.14
5.10.3.8.2	B5,7 + ripple	Seen on Scope	<600 mV pk-pk	40		30
5.10.3.8.3	B5,7 - voltage	S26-3, S27-2	-20.50 ±2.50V	-20.31	(10)	-20.
5.10.3.8.4	B5,7 - ripple	Seen on Scope	<600 mV pk-pk	40		30
5.10.3.9.1	B6 + voltage	S26-2, S27-3	20.50 ±2.50V	20.50	(11)	20.50
5.10.3.9.2	B6 + ripple	Seen on Scope	<600 mV pk-pk	30		15m
5.10.3.9.3	B6 - voltage	S26-2, S27-4	-20.50 ±2.50V	-20.50	(12)	-20.5
5.10.3.9.4	B6 - ripple	Seen on Scope	<600 mV pk-pk	30		15mV
5.10.3.10.1	SMA Htr + voltage	S26-2, S27-5	21.20 ±2.12V	22.33	(13)	22.4
5.10.3.10.2	SMA Htr + ripple	Seen on Scope	<630 mV pk-pk	30		15m
5.10.3.10.3	SMA Htr - voltage	S26-2, S27-6	-21.20 ±2.12V	-22.78	(14)	-22.5
5.10.3.10.4	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	30		15m
5.10.3.11.1	SMA +7V voltage	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.30V	7.688	(15)	7.73
5.10.3.11.2	SMA +7V output ripple	Seen on Scope	<210 mV pk-pk	30		25m

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DWM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.3.12.1	SMA +29V output voltage	S26-2, S27-9 (S27-11 for RDT)	29.50 ±1.50V	30.54 (16)	30.50V.
5.10.3.12.2	SMA +29V ripple	Seen on Scope	<870 mV, pk-pk	45	35 mV.
5.10.3.12.3	SMA -29V voltage	S26-2, S27-10 (S27-12 for RDT)	-29.50 ±1.50V	-30.53 (17)	-30.52V
5.10.3.12.4	SMA -29V ripple	Seen on Scope	<870 mV pk-pk	40	35 mV
5.10.3.13.1	MUX voltage	S26-3, S27-1	30.00 ±0.90V	30.34 (18)	30.25 V.
5.10.3.13.2	MUX ripple	Seen on Scope	<900 mV, pk-pk	40	35 mV.
5.10.3.14.1	Radiometer voltage	S26-3, S27-2	8.50 ±0.85V	8.247 (19)	8.156 V.
5.10.3.14.2	Radiometer ripple	Seen on Scope	<250 mV pk-pk	30	25 mV
5.10.3.15.1	CDVU voltage	S26-3, S27-3	8.00 ±0.80V	7.766 (20)	7.768 V.
5.10.3.15.2	CDVU ripple	Seen on Scope	<240 mV pk-pk	30	25 mV.
5.10.3.16.1	Analog + voltage	S26-3, S27-4	21.20 ±2.12V	22.59 (21)	22.51 V.
5.10.3.16.2	Analog + ripple	Seen on Scope	<630 mV pk-pk	30	25 mV.
5.10.3.16.3	Analog - voltage	S26-3, S27-5	-21.20 ±2.12V	-22.66 (22)	22.57 V.
5.10.3.16.4	Analog - ripple	Seen on Scope	<630 mV pk-pk	30	25 mV.
5.10.3.17.1	Electromech. voltage	S26-3, S27-6	33.40 ±3.34V	33.18 (23)	33.17 V.
5.10.3.17.2	Electromech. ripple	Seen on Scope	<1.0V pk-pk	30	30 mV.
5.10.3.18.1	Outgas voltage	S26-3, S27-7	100.0 ±12.0V	10353	103.01 V.
5.10.3.18.2	Outgas output ripple	Seen on Scope	<3.0V pk-pk	90mV	70 mV.
5.10.4.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		4.696	4.780 V.
5.10.4.2.1	Band 1 + volt. telemtry	S26-4, S28-5		3.765	3.765V.
5.10.4.2.2	Band 1 -	S28-6		3.754	3.750 V.
5.10.4.3.1	Band 2+	S28-7		3.725	3.730 V.
5.10.4.3.2	Band 2-	S28-8		3.715	3.709V.
5.10.4.4.1	Band 3+	S28-9		3.748	3.718 V.
5.10.4.4.2	Band 3-	S28-10		3.744	3.736 V.
5.10.4.5.1	Band 4+	S28-11		3.739	3.744V.
5.10.4.5.2	Band 4-	S26-4, S28-12		3.749	3.746V.
5.10.4.6.1	Band 5,7+	S26-5, S28-1		3.732	3.684V.
5.10.4.6.2	Band 5,7- volt. telemetry	S26-5, S28-2		3.717	3.673V.

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY		REDUNDA
5.10.4.7.1	Band 6 + volt. telemtry	S26-5, S28-3		-3.723		3.715
5.10.4.7.2	Band 6 -	S28-4		3.758		3.747
5.10.4.8.1	SMA Htr +	S28-5		4.098		4.103
5.10.4.8.2	SMA Htr -	S28-6		4.146		4.146
5.10.4.9	SMA +7V	S26-5, S27-7 (S27-8 for RDT)		4.919		4.965
5.10.4.10.1	SMA +29V	S26-5, S28-9 (S27-11 for RDT)		4.190		4.20
5.10.4.10.2	SMA -29V	S26-5, S28-10 (S27-12 for RDT)		3.994		3.986
5.10.4.11	MUX	S26-6, S28-1		4.316		4.27
5.10.4.12	Radiometer	S26-6, S28-2		4.802		4.75
5.10.4.13	CDVU	S26-6, S28-3		4.312		4.366
5.10.4.14.1	Analog + volt. telemtry	S26-6, S28-4		4040		4.023
5.10.4.14.2	Analog -	S26-6, S28-5		3.973		3.956
.10.4.15	Electromech.	S28-6		4.076		4.07
5.10.4.16	Outgas volt. telemetry	S26-6, S28-7		5.176		5.14
5.10.5.1.1	Analog + load current	S26-3, S27-11 mV ÷ 10 = Amps		15.769	(24)	15.70
5.10.5.1.2	MUX	S26-3, S27-12 mV ÷ 10 = Amps		41.38	(25)	41.33
5.10.5.1.3	Band 1 +	S26-7, S34-1 mV ÷ 0.5 = mA		91.70	(26)	71.52
5.10.5.1.4	Band 1 -	S34-2		-91.87	(27)	-71.74
5.10.5.1.5	2 +	S34-3		90.83	(28)	-90.71
5.10.5.1.6	2 -	S34-4		-91.70	(29)	-91.55
5.10.5.1.7	3 +	S34-5		91.79	(30)	90.43
5.10.5.1.8	3 -	S34-6		-91.54	(31)	-91.35
5.10.5.1.9	4 +	S34-7		91.55	(32)	71.55
5.10.5.1.10	4 -	S34-8		-91.27	(33)	-91.17
5.10.5.1.11	5,7 +	S34-9		91.83	(34)	10 58
5.10.5.1.12	5,7 -	S34-10		-90.98	(35)	-89.96
5.10.5.1.13	6 +	S34-11		47.84	(36)	47.65
5.10.5.1.14	Band 6 -	S26-7, S34-12		-47.68	(37)	-47.54
.10.5.1.15	SMA Htr +	S26-8, S34-1 mV ÷ 0.5 = mA		48.36	(38)	48.24
5.10.5.1.16	SMA Htr - load current	S26-8, S34-2 mV = mA		-9.027	(39)	-9.04

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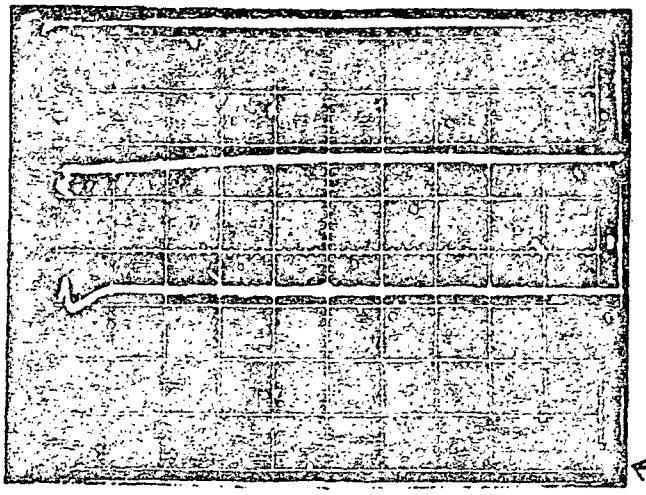
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	REDUND
5.10.5.1.17	SMA +29V load current	S26-8, S34-3	mV ÷ 0.402 = mA	50.97 (40)	50.7
5.10.5.1.18	SMA -29V	S34-4	mV ÷ 0.402 = mA	-50.70 (41)	-50.63
5.10.5.1.19	SMA +7V	S34-5	V ÷ 0.1 = Amps	2724 (42)	0.27
5.10.5.1.20	Analog -	S34-6	mV ÷ 0.402 = mA	-274.8 (43)	-0.27
5.10.5.1.21	Radiometer	S34-9	mV ÷ 0.5 = mA	156.44 (44)	154
5.10.5.1.22	CDVU	S34-10	mV ÷ 0.5 = mA	273.5 (45)	0.277
5.10.5.1.23	Electromech. load current	S26-8, S34-11	mV ÷ 0.402 = mA	211.1 (46)	211
5.10.5.2.1	Bus power supply voltage	S26-1, S27-1 (S27-3 for RDT)		22.95 (47)	23.0
5.10.5.2.2	Bus input current	S26-1, S27-2 (S27-4 for RDT)	mV ÷ 10 = Amps	162.41 (48)	160
5.10.5.2.3	P_{IN} (Section 5.10.5)			372.73	369.
5.10.5.2.4	P_{IN} (Section 5.10.3)			373.039	368.4
5.10.5.2.5	P_{IN} (avg)			372.885	368.7
5.10.5.2.9	Input current at current limit		26-1, 27-2 (26-1 27-4 Rdt)	18963	209.0
	Input voltage at current limit		27-1 (27-3 Rdt)	22.30	22.5
	MUX voltage at current limit		26-3, 27-1	28.71	26.
	MUX current at current limit		27-12	38.81	52.
5.10.5.3.1	P_{OUT}			274.287	272.4
5.10.5.3.2	Efficiency		>70%	74.05	74.3

10.4 Performance test (continued)

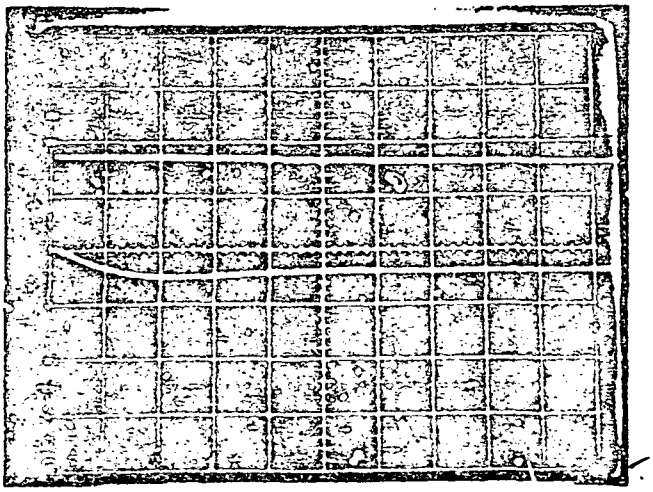
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUND.
5.10.6.1	+7V output pulsed	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	6.970	7.051

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-PRIMARY SIDE



(0.2A) CURRENT/DIV: 2 amps
(1V) VOLTAGE/DIV: 2 v/d
(200uS) SWEEP RATE: 200 μsec

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load on SMA +7V outputs is being removed - PRIMARY SIDE

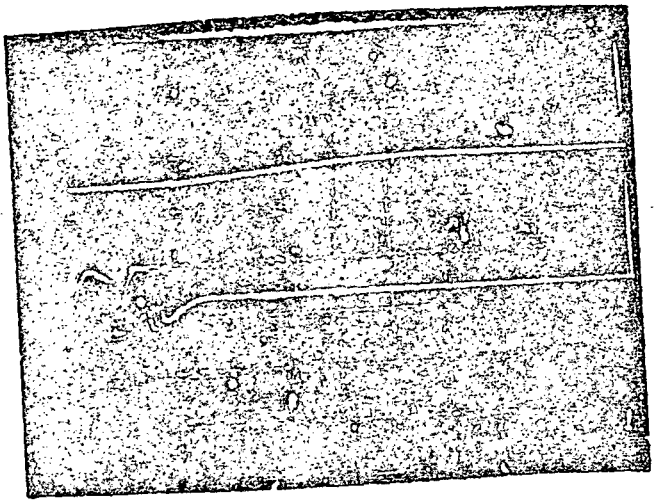


(0.2A) CURRENT/DIV: 2 amps
(1V) VOLTAGE/DIV: 2 v/d
(200uS) SWEEP RATE: 50 μsec

10.4 Performance test (continued)

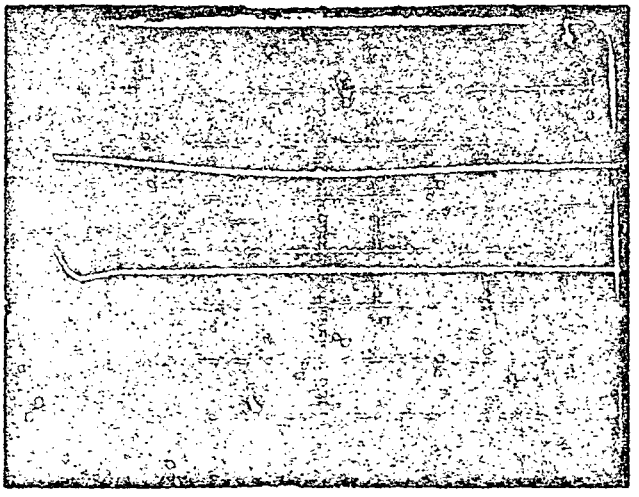
REF. PARA.	DESCRIPTION

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-REDUNDANT SIDE



(0.2A) CURRENT/DIV: 2A, A.C.
(1V) VOLTAGE/DIV: 2V.
(200uS) SWEEP RATE: 200 μ sec.

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load is being removed-REDUNDANT SIDE



(0.2A) CURRENT/DIV: 2A, A.C.
(1V) VOLTAGE/DIV: 2V.
(200uS) SWEEP RATE: 200 μ sec.

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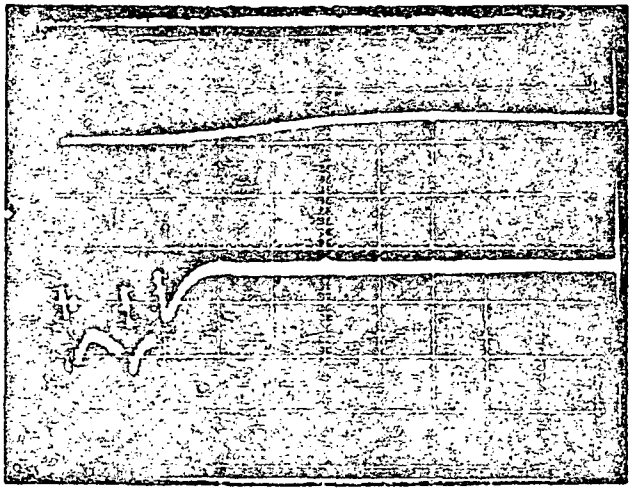
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.6.3	Input bus current	S26-1, S27-2 (S27-4 for RDT)		168.45V	167.47
5.10.6.4	SMA +7V TM- pulsed	S26-5, S28-7 (S28-8 for RDT)		4.552V	4.642V
5.10.6.5	SMA +7V load current-pulsed	(S26-8, S34-5		4.551V	4.555V

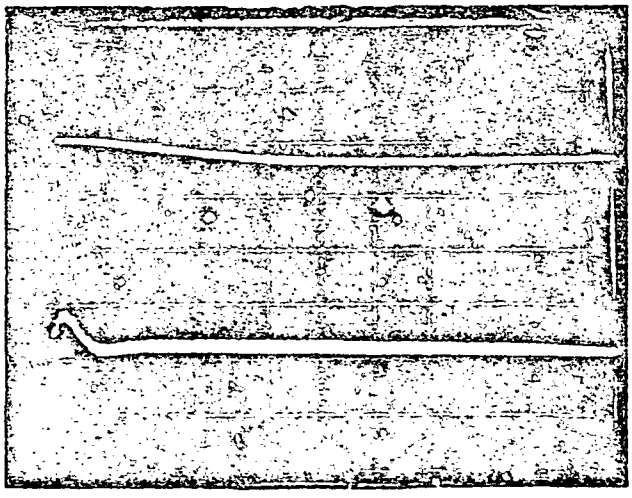
5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as SMA +7V output is being pulse-loaded-PRIMARY SIDE



(1A)* SMA CURRENT/DIV: 100 mV
(NA) BUS CURRENT/DIV: 1 mA A.C.
(200uS) SWEEP RATE: 200 μsec.

* Using 0.1Ω shunt and 100 mV/Div on scope

5.10.6.7 Photograph of transients induced on input bus current and SMA +7V load current as pulse-load is being removed-PRIMARY SIDE

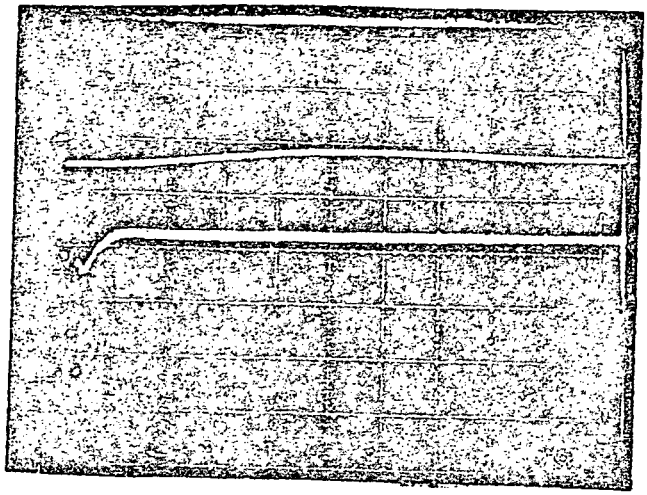


(1A)* SMA CURRENT/DIV: 100 mV
(NA) BUS CURRENT/DIV: 1 mA A.C.
(200uS) SWEEP RATE: 200 μsec.

*Using 0.1Ω shunt and 100mV/Div on Scope

10.4 Performance test (continued)

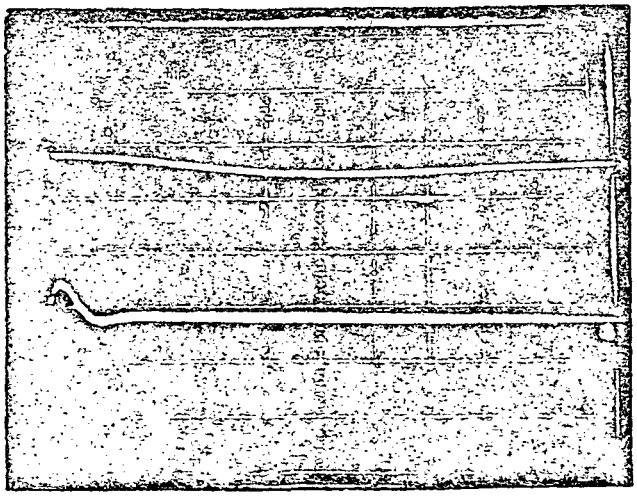
REF. PARA.	DESCRIPTION
5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as SMA + 7V output is being pulse loaded - REDUNDANT SIDE



(1A)* SMA CURRENT/DIV: 100 mV.
(2A) BUS CURRENT/DIV: 2A
(200uS) SWEEP RATE: 200 µ sec.

*Using 0.1 Ω shunt and 100 mV/Div on scope.

5.10.6.6 Photograph of transients induced on input bus current and SMA + 7V load current as pulse-load is removed - REDUNDANT SIDE



(1A)* SMA CURRENT/DIV: 100 mV
(2A) BUS CURRENT/DIV: 2 A.
(200uS) SWEEP RATE: 200 µsec.

*Using 0.1 Ω shunt and 100mV/Div on scope.

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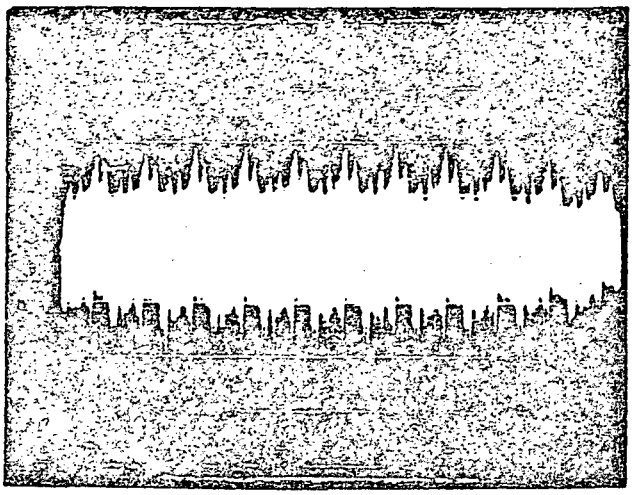
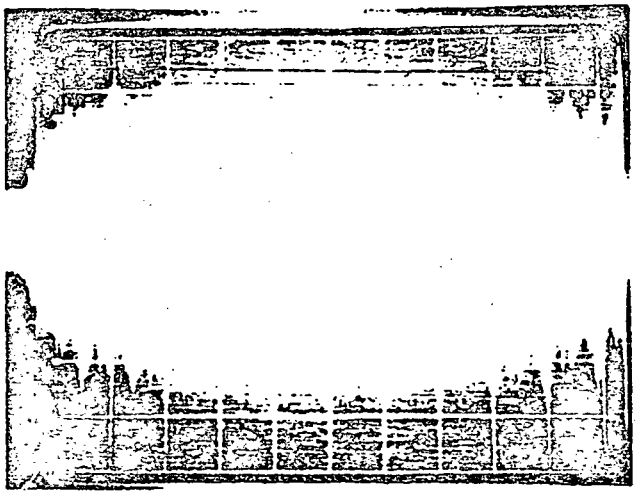
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION
5.10.7.1	Photograph of reflected input current ripple - PRIMARY SIDE



(1mA) CURRENT/DIV: 2 mAmps. A.
(10uS) SWEEP RATE: 10 μ sec.

5.10.7.1 Photograph of reflected input current ripple - REDUNDANT SIDE

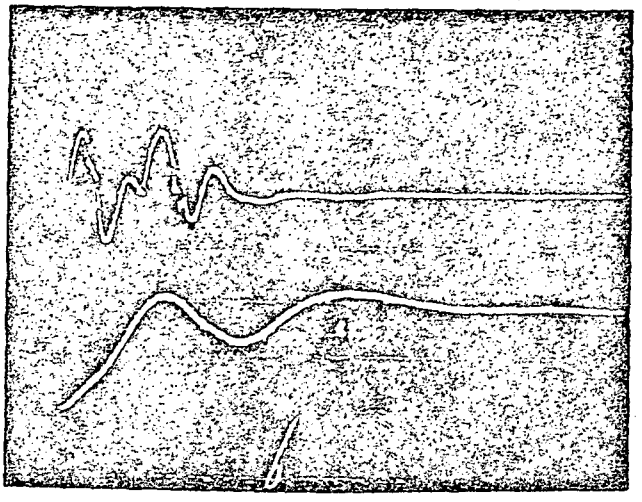


(1mA) CURRENT/DIV: 2 mA A.
(10uS) SWEEP RATE: 10 μ sec

125

.1.1	Input current - full load	S26-1, S27-2 (S27-4 for RDT)	162.32 V	160.05
,.8.1.2	Input current w/o analog load	Same	129.50 V	128.39

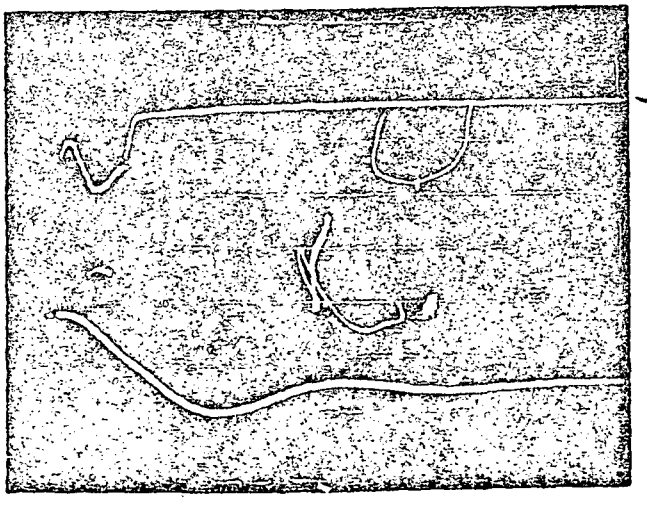
,.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is enabled - PRIMARY SIDE



Output Voltage - Ladio
22.59 V

(2V) VOLTAGE/DIV: 2 volt/div
(1A) CURRENT/DIV: 1Amp/Div.
(500uS) SWEEP RATE: 50µsec.

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is disabled - PRIMARY SIDE



Open Circuit Voltage...
26.24 V

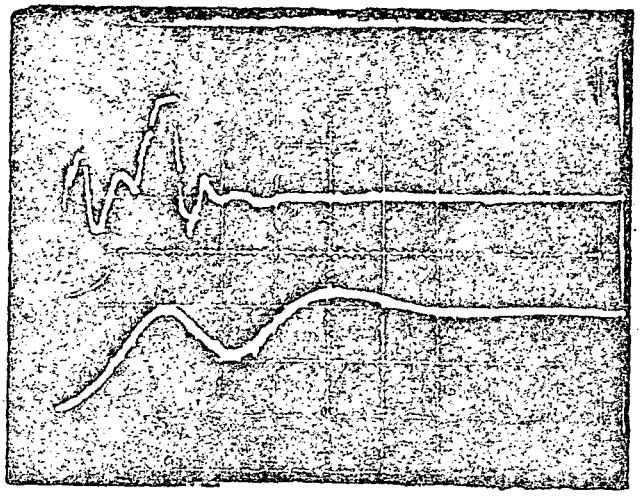
(5V) VOLTAGE/DIV: 2V/Div.
(1A) CURRENT/DIV: 1 Amp./Div.
(1mS) SWEEP RATE: 50µsec.

← → Bus Current

10.4 Performance test (continued)

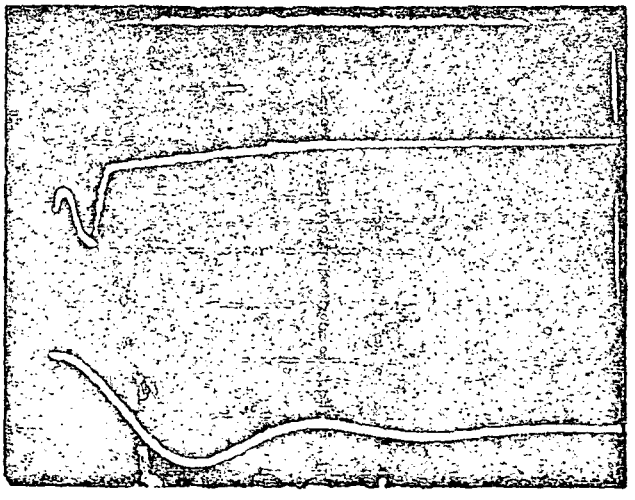
REF. PARA.	DESCRIPTION

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is enabled - REDUNDANT SIDE.



(2V) VOLTAGE/DIV: 2V.
(1A) CURRENT/DIV: 1A.
(500uS) SWEEP RATE: 500 usec.

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is disabled - REDUNDANT SIDE.



(5V) VOLTAGE/DIV: 2V.
(1A) CURRENT/DIV: 1A.
(1mS) SWEEP RATE: 500 usec.

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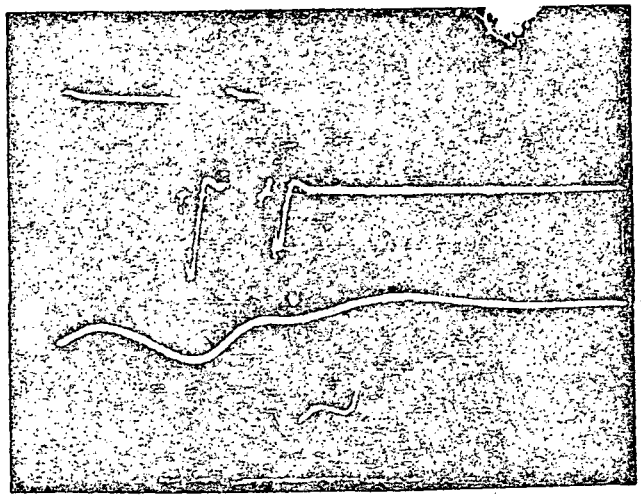
10.4 Performance test (continued)

F. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.2.1	Input bus current w/o SMA +7V load	S26-1, S27-2 (S27-4 for RDT)		147.62 mV	147.50 mV

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is enabled - PRIMARY SIDE.



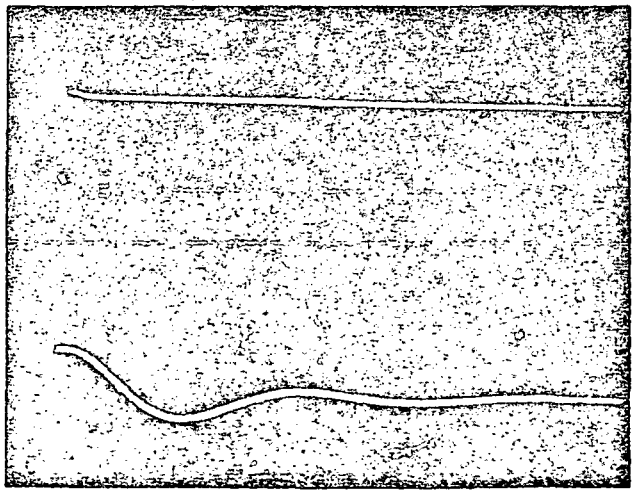
No load 9.575 V
Loaded 7.689 V

(5V) VOLTAGE/DIV: 2V/D.V.
(1A) CURRENT/DIV: 1Amp./D.V.
(200uS) SWEEP RATE: 500 μsec./D.V.

Output Voltage 7.689V

Bus Current

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - PRIMARY SIDE.



Output Voltage 9.575

(2V) VOLTAGE/DIV: 2V/D.V.
(1A) CURRENT/DIV: 1Amp./D.V.
(2mS) SWEEP RATE: 500 μsec./D.V.

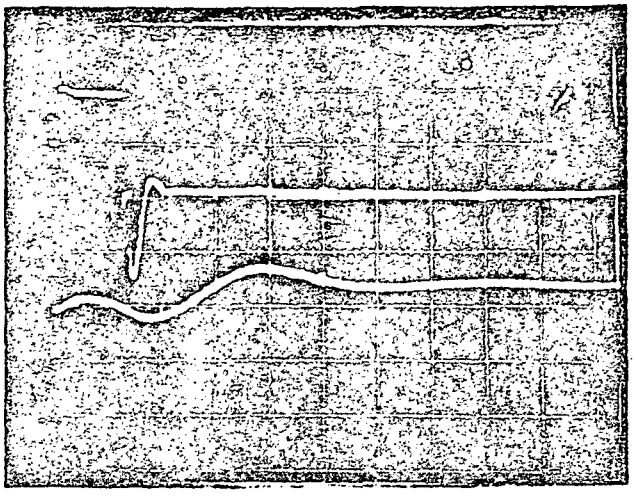
Bus Current

128

10.4 Performance test (continued)

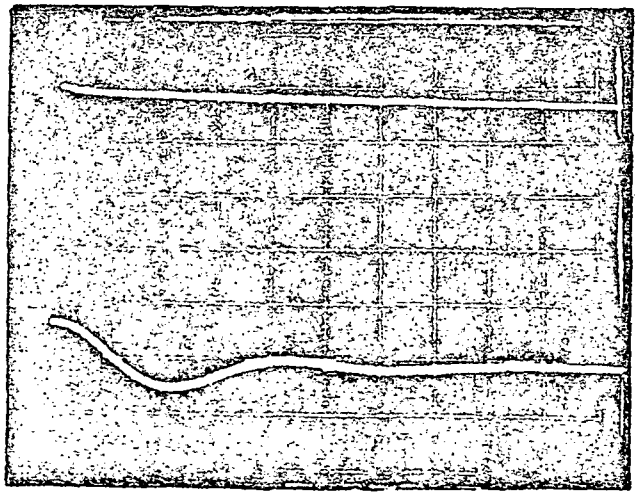
REF. PARA.	DESCRIPTION

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7 output voltage as SMA +7V is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(200uS) SWEEP RATE: 500 μsec

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - REDUNDANT SIDE



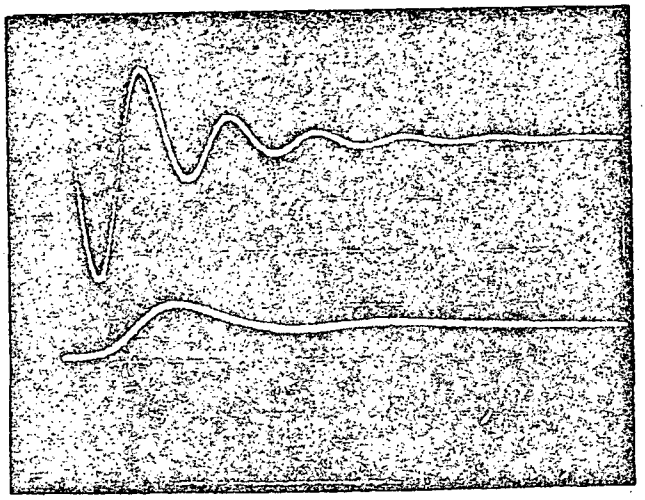
(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(2mS) SWEEP RATE: 500 μsec

129

10.4 Performance test (continued)

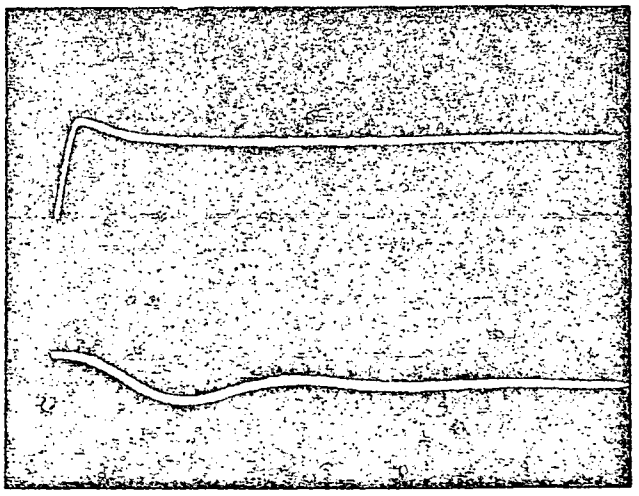
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.2.3	Input bus current w/o SMA ±29V load	S26-1, S27-2 (S27-4 for RDT)		157.37mV	155.6

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA +29V is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1.0 V/D.V.
(0.5V) CURRENT/DIV: 0.5 Amp/D.V.
(1mS) SWEEP RATE: 500μ sec.

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is disabled - PRIMARY SIDE

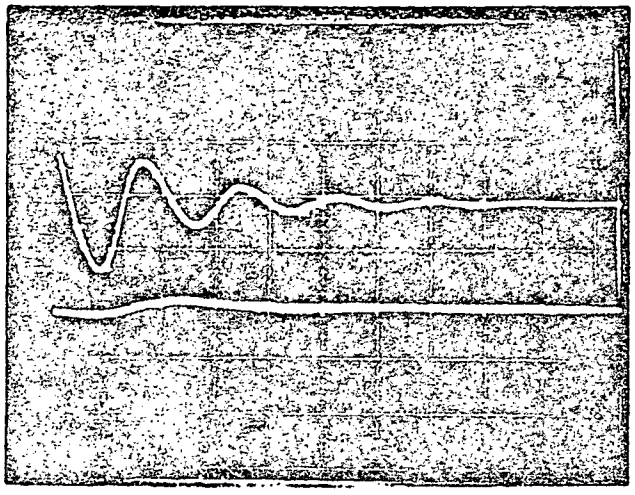


(2V) VOLTAGE/DIV: 1.0 V/D.V.
(0.5A) CURRENT/DIV: 0.5 A-p/D.V.
(1mS) SWEEP RATE: 500 μsec./D.

130

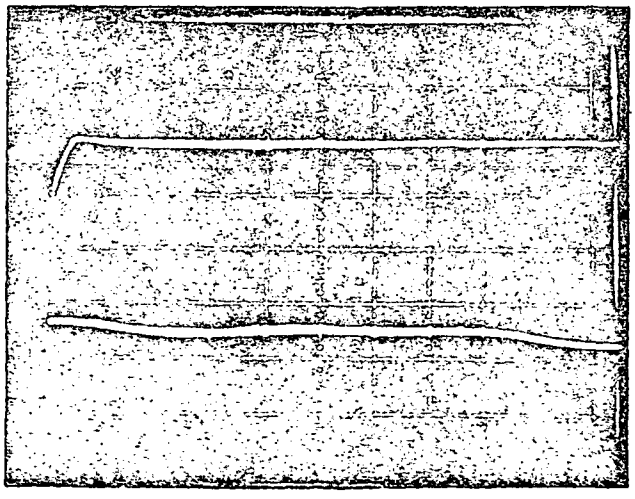
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION
5.10.8.2.4	Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1 V
(0.5A) CURRENT/DIV: .5 A
(1mS) SWEEP RATE: 500 μsec.

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as ±29V is disabled - REDUNDANT SIDE



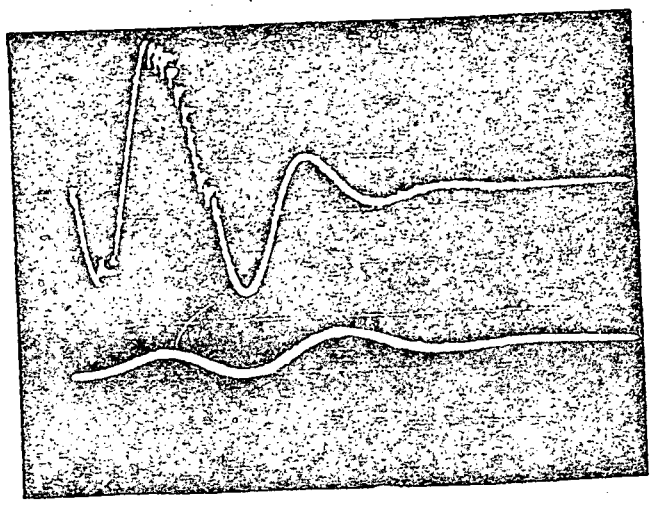
(2V) VOLTAGE/DIV: 1V
(0.5) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 500 μsec.

131

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.3.1	Input bus current w/o CDVU load	S26-1, S27-2 (S27-4 for RDT)		159.03 mA	156.61

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - PRIMARY SIDE



Loaded 7.649 V

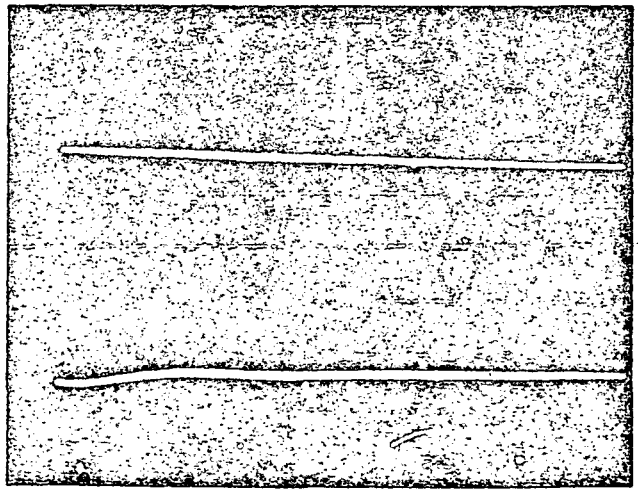
Unloaded 7.541 V

(2V) VOLTAGE/DIV: 1.0V/div

(0.5A) CURRENT/DIV: 0.5 Amps/Div.

(1mS) SWEEP RATE: 500 μsec./Div.

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1.0 V/Div.

(0.5V) CURRENT/DIV: 0.5 Amps/Div

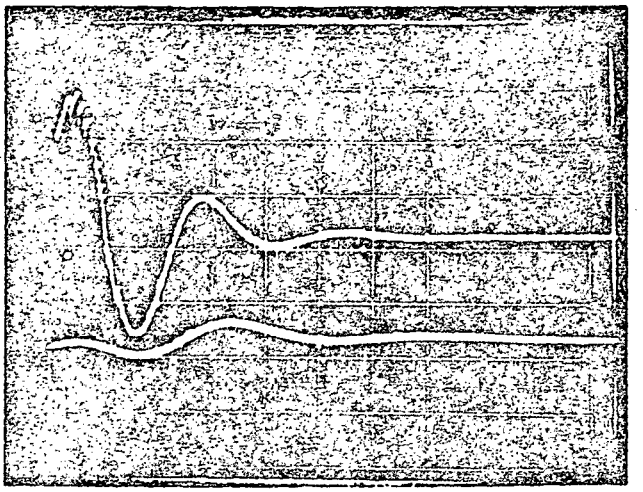
(1mS) SWEEP RATE: 500 μsec./Div.

132

10.4 Performance test (continued)

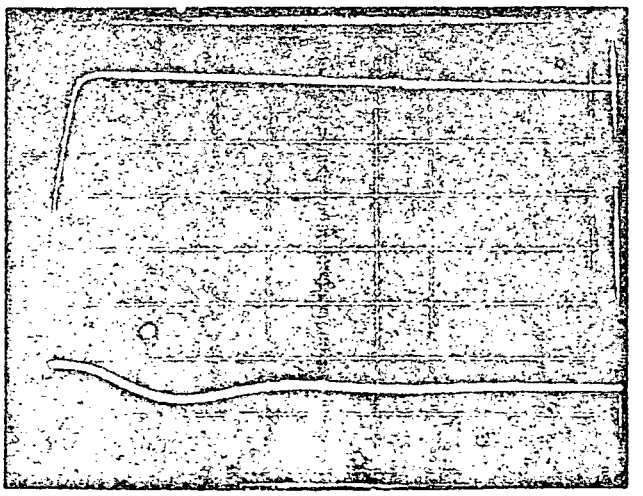
REF. PARA.	DESCRIPTION

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: 0.5A
(1mS) SWEEP RATE: 500μsec.

5.10.8.3.2 Photograph as transients induced on input bus current and CDVU output voltage as CDVU is disabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: 0.5A
(1mS) SWEEP RATE: 500μsec.

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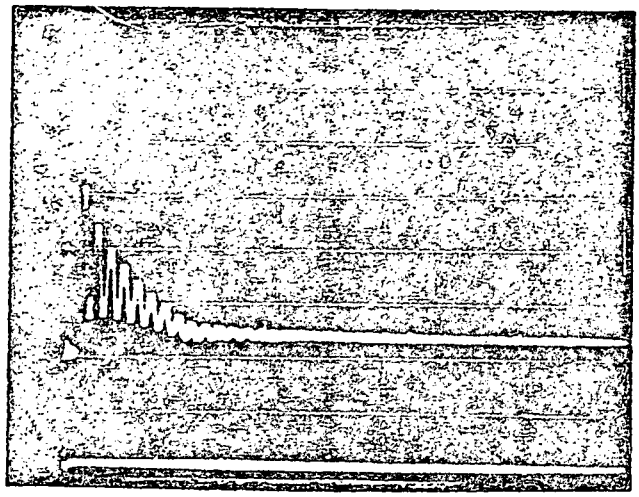
10.4 Performance test (continued)

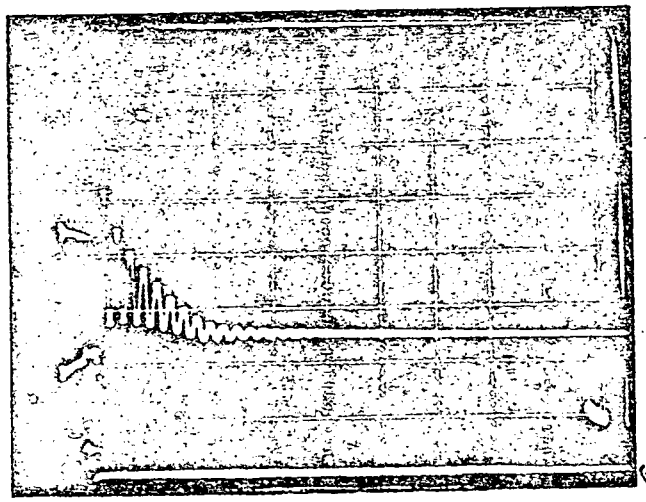
REF. PARA.	DESCRIPTION

5.10.9.1 Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V/D.V.
(5A) CURRENT/DIV: 5 Amps./D.
(500uS) SWEEP RATE: 5 μsec/

Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V.
(5A) CURRENT/DIV: 5A.
(500uS) SWEEP RATE: 500 μsec

→ V. Bus

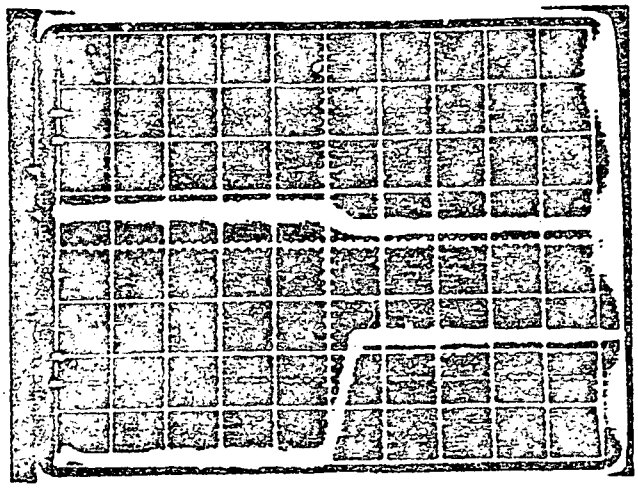
134

→ I. Bus

10.4 Performance test (continued)

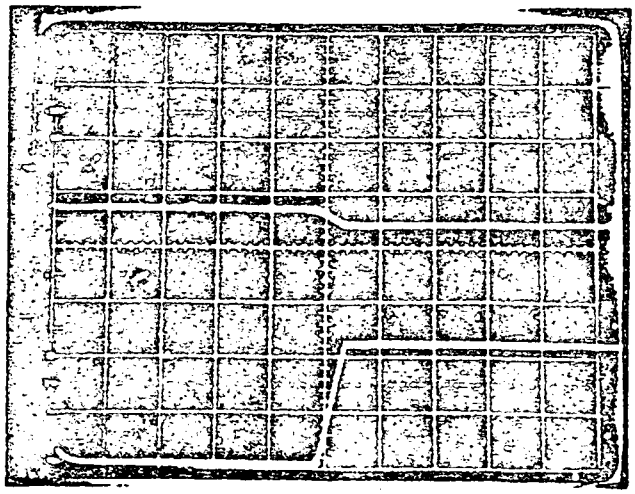
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.9.2	UUT stays off when bus is reapplied.	S1-ON (S2-ON for RDT)	--	✓	✓

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V/D.V.
(5A) CURRENT/DIV: 5 Amps./D
(100mS) SWEEP RATE: 100 m sec./

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - REDUNDANT SIDE



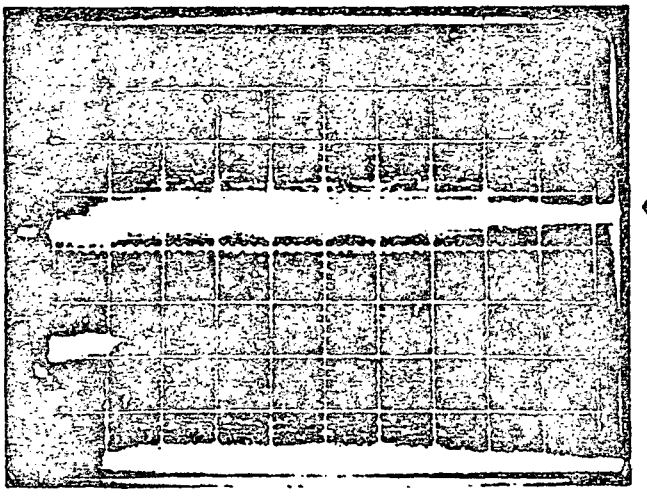
(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(100mS) SWEEP RATE: 100 m sec.

135

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - PRIMARY SIDE



Input Current

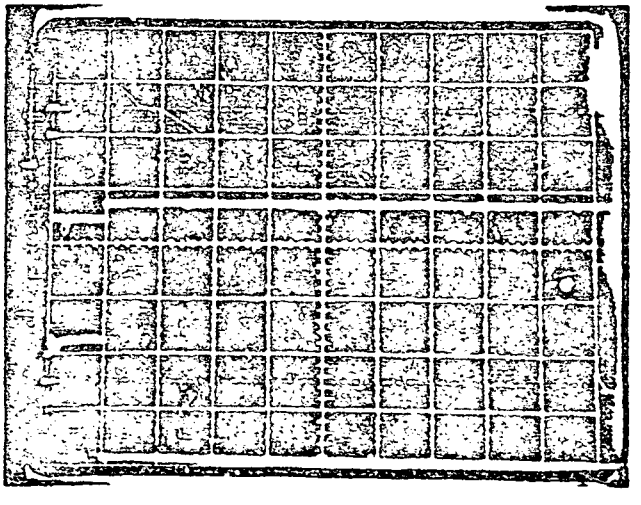
(5V) VOLTAGE/DIV: 5V/D.V.

(5A) CURRENT/DIV: 5Amps/DIV

(10mS) SWEEP RATE: 10msec/D.V.

Bus Voltage

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V

(5A) CURRENT/DIV: 5A

(10mS) SWEEP RATE: 10msec.

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	PRIMARY	REDUNDANT
5.10.9.5	Record	S27-2 (S27-4)		156.84 mV	159.67 mV
5.10.9.6	Record	(S27-4 (S27-2)		2.762 mV	[illegible]
	Record	S27-2 (S27-4)		155.36 mV	151.44 mV
5.10.9.7	Record that UUT turns on.	(Checkmark)		✓	✓
5.10.10.1	Input bus current AFTER it reads ~ 17A AND input bus voltage reads ~ 21V.	S26-1, S27-2 (S27-4 for RDT)		1 50 [illegible] V	150.07 V
5.10.10.2	Input bus voltage with 17.0A load	S26-1, S27-1 (S27-3 for RDT)		23.00 V.	23.02 V.
5.10.10.3	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		4.570 V.	4.491 V.
5.10.10.4	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.505 V	3.506 V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.07 V	23.01 V.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		118.14 mV	121.34 mV
5.10.10.5	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.023 V.	3.004 V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.00 V	23.01 V.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		102.45 V	104.1 mV
5.10.10.6	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.501 V.	2.50[illegible] V
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.02 V.	23.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		87.72 mV.	88.89
5.10.10.7	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.022 V.	2.004
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.00 V.	23.[illegible]
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		73.66 mV	[illegible] V

10.4 Performance test (continued)

REF PARA	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.10.8	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.5041V.	1.5140V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.00 V.	23.02V.
	Input bus current	S26-1, S27-4 (S27-4 for RDT)		57.62mV.	59.82mV.
5.10.10.9	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		.9497V.	1.0539V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.05V	23.01V.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		2.48mV	-2.92 mV.
5.10.10.10	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		0.5224V.	0.5153 V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.02 V.	23.02 V.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		30.15mV	27.38mV
5.10.10.11	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		.2119V.	.2066V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.03V.	23.05V
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		21.01mV	20.68mV
5.10.10.12	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		61.80mV	[illegible]
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.05V	[illegible]
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		13.172mV.	[illegible]
5.10.11.1	Band 1+ output voltage	S26-1, S27-5		22.99V.	23.[illegible]
5.10.11.2	Band 1- output voltage	S27-6		-23.08V.	-22.[illegible]
5.10.11.3	2+	S27-7		23.21V.	23.[illegible]
5.10.11.4	2-	S27-8		-23.22V.	-23.[illegible]
5.10.11.5	3+	S27-9		23.14V.	23.[illegible]
5.10.11.6	3-	S27-10		-22.31V.	-22.[illegible]
5.10.11.7	Band 4+ output voltage	S26-1, S27-11		23.24V.	23.[illegible]

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.11.8	Band 4- output voltage	S26-1, S27-12		-23.06V.	-22.94V
5.10.11.9	5,7+	S26-2, S27-1		22.68V.	22.72
5.10.11.10	5,7-	S27-2		-22.62V	-22.67
5.10.11.11	6+	S27-3		22.51V.	22.56
5.10.11.12	Band 6-	S27-4		-22.78V.	-22.72
5.10.11.13	SMA Htr +	S27-5		24.29V	24.57
5.10.11.14	Htr -	S27-6		-24.77V.	-24.67
5.10.11.15	+7V	S27-7		9.106V.	N/A
5.10.11	+7V	(S27-8 For RDT)		N/A	9.187V.
5.10.11	+29V	S27-9		32.36V.	N/A
5.10.11	+29V	(S27-11 For RDT)		N/A	32.74V
5.10.11	-29V	S27-10		-32.86V.	N/A
	SMA -29V	S26-2, (S27-12 for RDT)		N/A	-32.48V.
5.10.11.18	Radiometer	S26-3, S27-2		9.712V.	9.813V
5.10.11.19	CDVU	S27-3		9.381V.	9.466
5.10.11.20	Analog +	S27-4		26.51V	27.01V.
5.10.11.21	Analog -	S27-5		-23.94V	-23.77
5.10.11.22	Electromech.	S27-6		38.34V	38.05V
5.10.11.23	Outgas	S27-7		102.82V	101.76V
5.10.11.24	Parasitic	S27-9		31.02V	N/A
	Parasitic output voltage	S26-3, (S27-10 for RDT)		N/A	31.3V.
5.10.11.25	Band 1+ TM output	S26-4, S28-5		4.192V	4.217
5.10.11.26	1-	S28-6		4.190V	4.214
5.10.11.27	2+	S28-7		4.220V	4.156
5.10.11.28	2-	S28-8		4.197V	4.155
5.10.11.29	3+	S28-9		4.330V	4.194
5.10.11.30	3-	S28-10		4.148V	4.252
5.10.11.31	4+	S28-11		4.214V	4.152
5.10.11.32	4-	S26-4, S28-12		4.193V	4.162
5.10.11.33	Band 5,7+ TM output	S26-5, S28-1		4.136V	4.143

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDAN
5.10.11.34	Band 5,7- TM output	S26-5, S28-2		4.108 V.	4.113
5.10.11.35	6+	S28-3		4.067 V.	4.080
5.10.11.36	Band 6-	S28-4		4.150 V.	4.138
5.10.11.37	SMA Htr +	S28-5		4.429 V	4.434
5.10.11.38	Htr -	S28-6		4.483 V	4.465
5.10.11.39	+7V	S28-7 (S28-8 for RDT)		5.613 V.	5.656
5.10.11.40	+29V	S28-9 (S28-11 for RDT)		4.414 V.	4.490
5.10.11.41	SMA -29V	S26-5, S28-10 (S28-12 for RDT)		4.192 V.	4.161
5.10.11.42	Radiometer	S26-6, S28-2		5.264 V.	5.319
5.10.11.43	CDVU	S28-3		5.146 V.	5.254
5.10.11.44	Analog +	S28-4		4.703 V.	4.799
5.10.11.45	Analog -	S28-5		3.964 V.	3.990
5.10.11.46	Electromech.	S28-6		4.677 V.	4.640
5.10.11.47	Outgas - TM output	S26-6, S28-7		5.119 V	5.066
5.10.12.1	Bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.64 V.	23.00 V
5.10.12.2	Input bus current	S26-1, S27-2 (S27-4 for RDT)		50.93 mV.	5078 mV.
5.10.12.3	SMA Htr + output voltage	S26-2, S27-5		21.69 V.	21.80 V
5.10.12.4	Htr + ripple	Seen on Scope	<630 mV pk-pk	20 mV.	30 mV
5.10.12.5	Htr - voltage	S26-2, S27-6		-22.18 V	-22.31 V
5.10.12.6	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	70 mV.	30 mV.
5.10.12.7	CDVU voltage	S26-3, S27-3		7.632 V.	7.752 V.
5.10.12.8	CDVU ripple	Seen on Scope	<240 mV pk-pk	40 mV.	30 mV
5.10.12.9	Outgas - output voltage	S26-3, S27-7		86.57 V.	85.76 V.
5.10.12.10	Outgas - output ripple	Seen on Scope	2.50V pk-pk	200 mV.	200 mV
5.10.12.11	Parasitic output voltage	S26-3, S27-9 (S27-10 for RDT)		30.45 V.	30.34 V.
5.10.12.12	Parasitic output ripple	Seen on Scope	<900 mV pk-pk	40 mV.	30 mV

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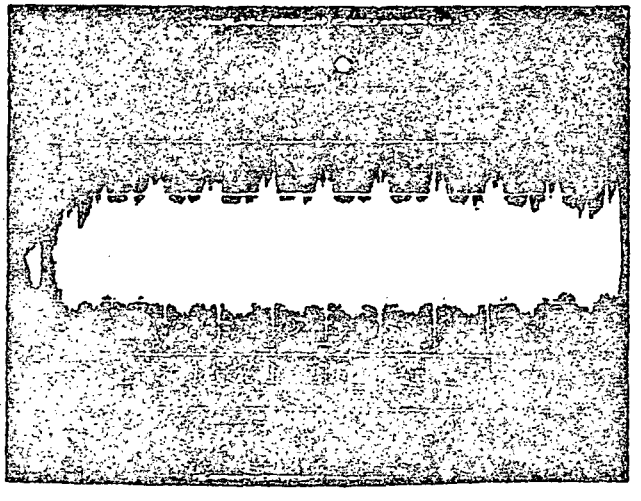
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.13.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		1.2953V.	1.3421 V.
5.10.13.2	SMA Htr + output	S26-5, S28-5		3.962 V.	3.980 V.
5.10.13.3	SMA Htr -	S26-5, S28-6		4.019V.	4.043 V.
5.10.13.4	CDVU	S26-6, S28-3		4.292V.	4.356 V.
5.10.13.5	Outgas output telemetry	S26-6, S28-7		4.321 V.	4.308 V.

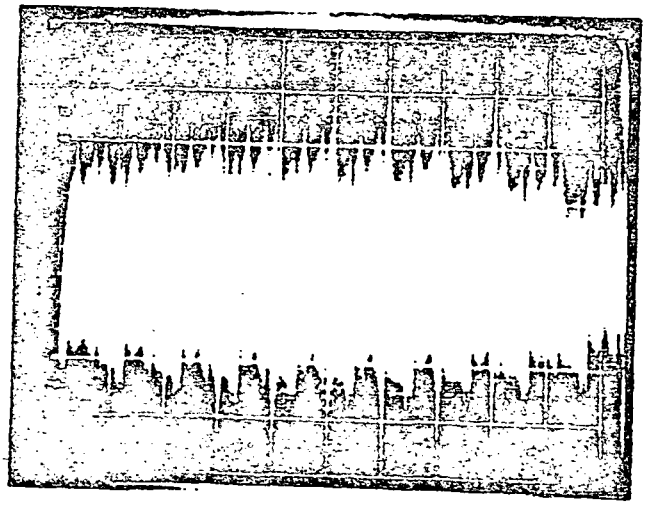
5.10.14.1 Photograph of reflected input current ripple in outgas mode — PRIMARY SIDE



(2mA) CURRENT/DIV: 2mA. A.C.

(10uS) SWEEP RATE: 10 μsec.

5.10.14.1 Photograph of reflected input current ripple in outgas mode — REDUNDANT SIDE



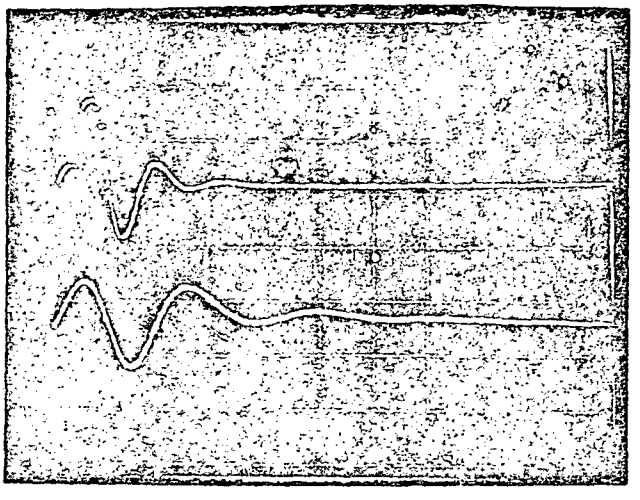
(2mA) CURRENT/DIV: 2mA. A.C.

(10uS) SWEEP RATE: 10 μsec.

10.4 Performance test (continued)

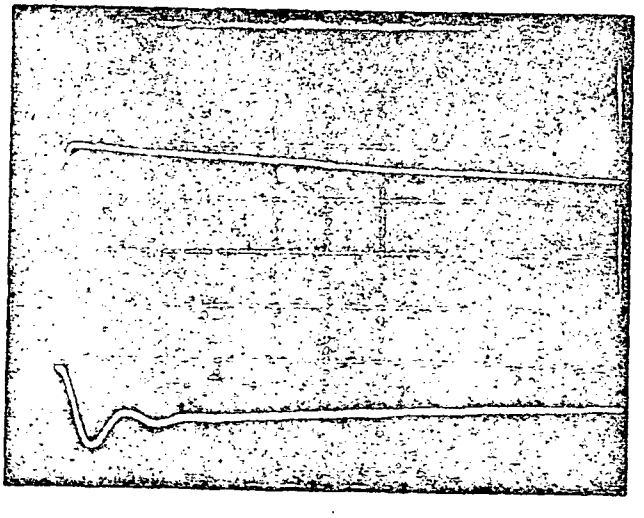
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.1.1	Input current with CDVU off.	S26-1, S27-2 (S27-4 for RDT)		48.03 V	47.73 V

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V.
(200mA) CURRENT/DIV: 200 A.
(1mS) SWEEP RATE: 1.0 sec.

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled - PRIMARY SIDE

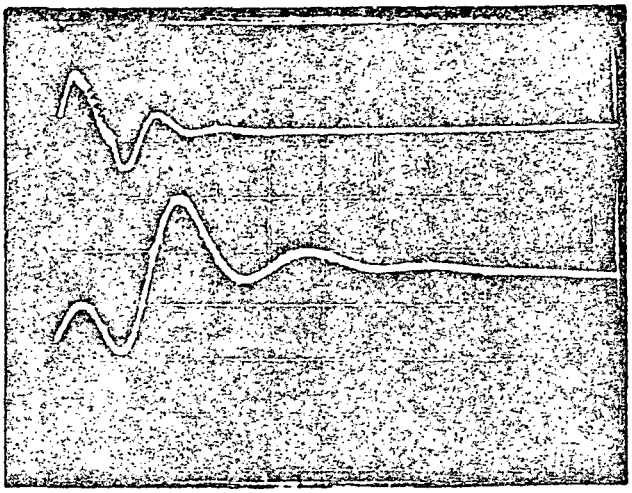


(2V) VOLTAGE/DIV: 2V.
(200mA) CURRENT/DIV: 200 A.
(2mS) SWEEP RATE: 2 sec.

10.4 Performance test (continued)

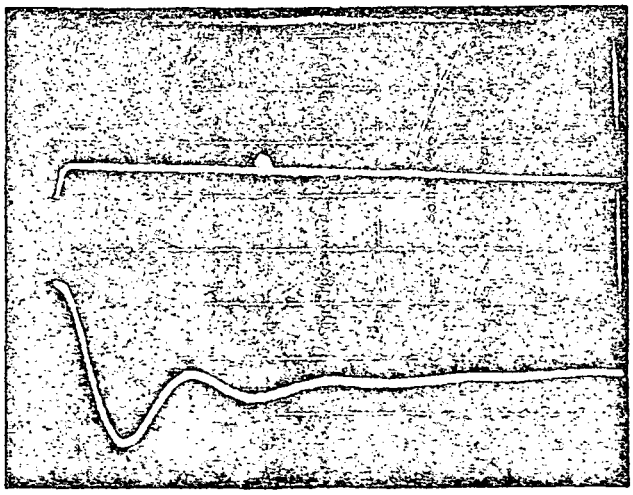
REF. PARA.	DESCRIPTION

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled — REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2V
(200mA) CURRENT/DIV: 200mA
(1mS) SWEEP RATE: 1msec.

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled — REDUNDANT SIDE

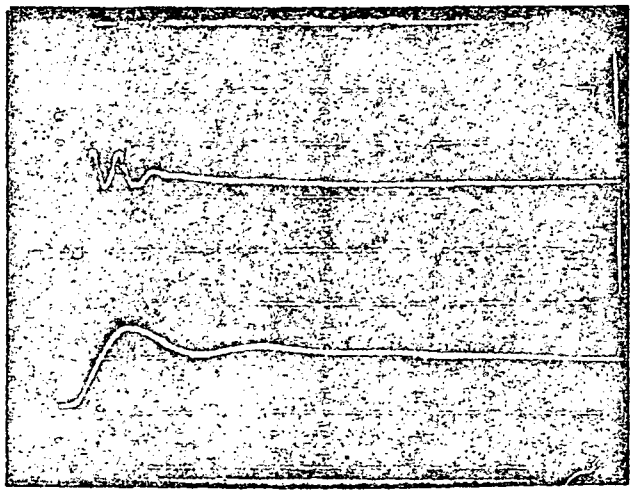


(2V) VOLTAGE/DIV: 2V
(200mA) CURRENT/DIV: 200mA
(2mS) SWEEP RATE:

10.4 Performance test (continued)

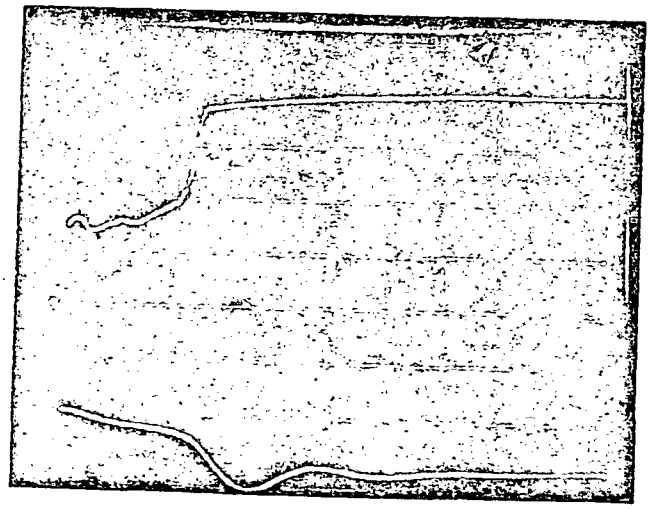
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.2.1	Input bus current with outgas disabled	S26-1, S27-2 (S27-4 for RDT)		16.938 mV.	1730.

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V.
(2A) CURRENT/DIV: 2A.
(1mS) SWEEP RATE: 1 m sec.

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(2mS) SWEEP RATE: 1 m sec.

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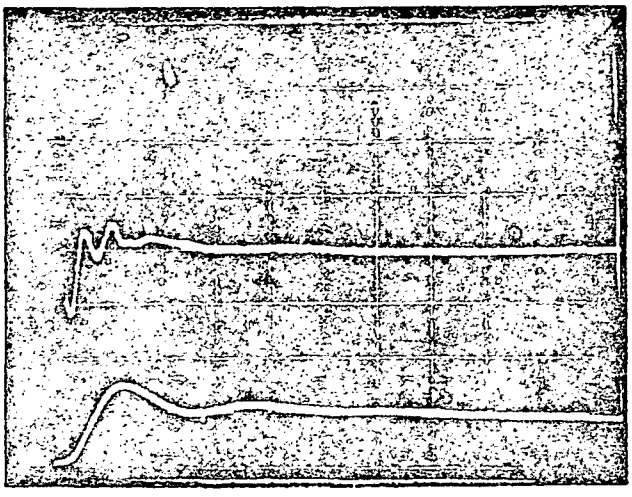
10.4 Performance test (continued)

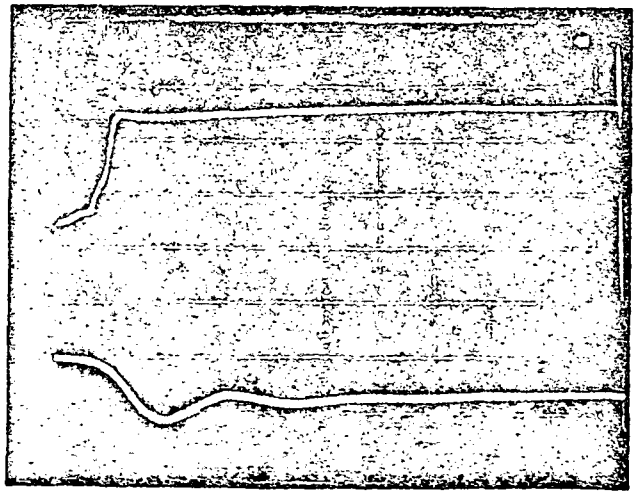
REF. PARA. DESCRIPTION

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(500uS) SWEEP RATE: 1 msec

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1m.

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITION	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.16.1	BPS voltage	S26-1, S27-1 (S27-3 for RDT)		23.046V (49)	23.80V
5.10.16.2	BPS current	S26-1, S27-2 (S27-4 for RDT)		20.41V (50)	21.0A
5.10.16.3	SMA Htr +output voltage	S26-2, S27-5		21.73V (13)	21.11
5.10.16.4	SMA Htr +load current	S26-8, S34-1		46.83mV (73)	+723mA
5.10.16.5	SMA Htr -output voltage	S26-2, S27-6		-22.13V (14)	-22.1
5.10.16.6	SMA Htr -load current	S26-8, S34-2		-8.736mV (37)	-8.82
5.10.16.7	CDVU output voltage	S26-3, S27-3		7.631V (20)	7.747
5.10.16.8	CDVU load current	S26-8, S34-10		.2722V (45)	.2763
5.10.16.9	Parasitic output voltage	S26-3, S27-9 (S27-10)		30.66V (33)	30.9V
5.10.16.10	Parasitic load current	S26-8, S34-7		142.82mV (44)	144.3
5.10.16.11	Input power (5.10.16.1 x 5.10.16.2)			47.025	48.50
5.10.16.12	Output power ((5.10.16.3 x 5.10.16.4) + (5.10.16.5 x 5.10.16.6) + (5.10.15.7 x 5.10.16.8) + (5.10.16.9 x 5.10.16.10))	(Primary) N/A	(Redundant) N/A	17.275	17.67
5.10.16.13	Efficiency ((5.10.16.12) ÷ (5.10.16.11)) x 100%			36.7%	36.4%

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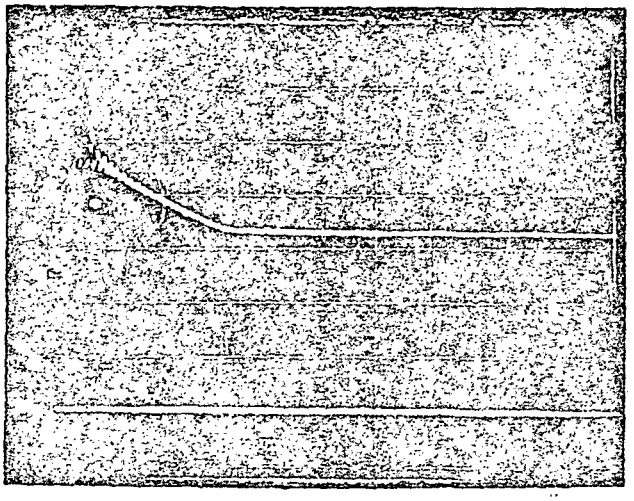
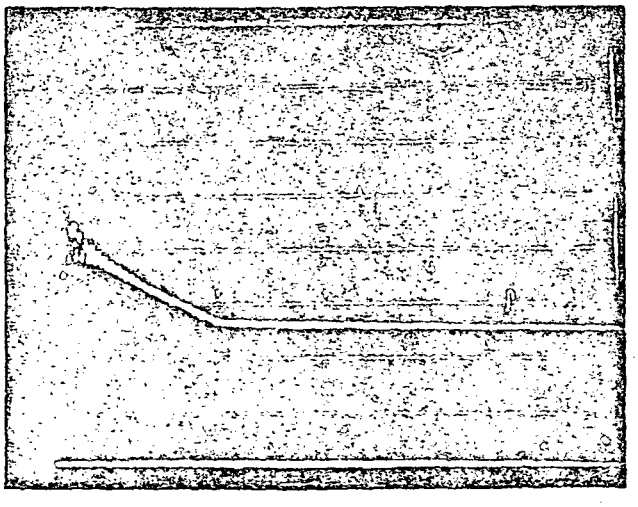
10.4 Performance test (continued)

5.10.17.1 Photograph of input bus current and input bus voltage as is disable - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V.
(2A) CURRENT/DIV: 2A.
(1mS) SWEEP RATE: 1 msec.

5.10.17.1 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE



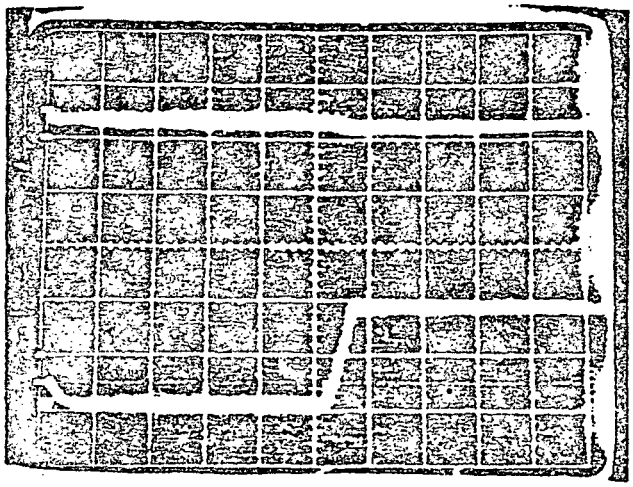
(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1 msec.

10.4 Performance test (continued)

5.10.17.2 Unit stays off (check)

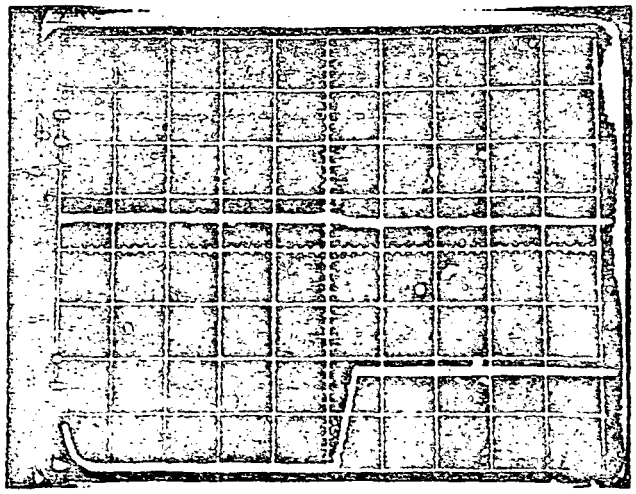
✓ Primary ✓ Redundant

5.10.17.3 Photograph of input bus current and input bus voltage as is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A.
(100mS) SWEEP RATE: 100 m sec.

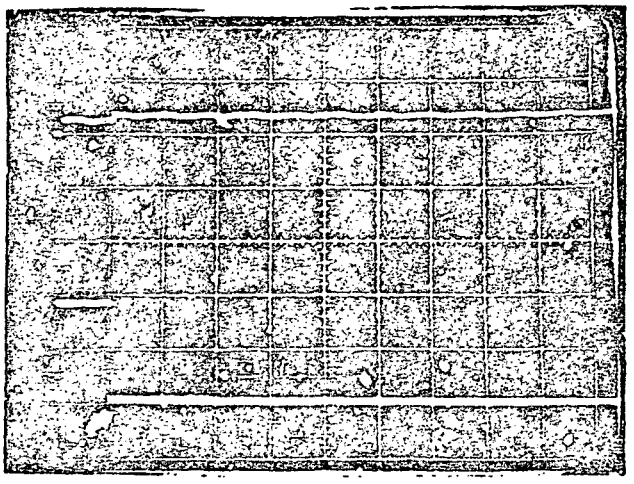
5.10.17.3 Photograph of input bus current and input bus voltage as as is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(100mS) SWEEP RATE: 100 m sec

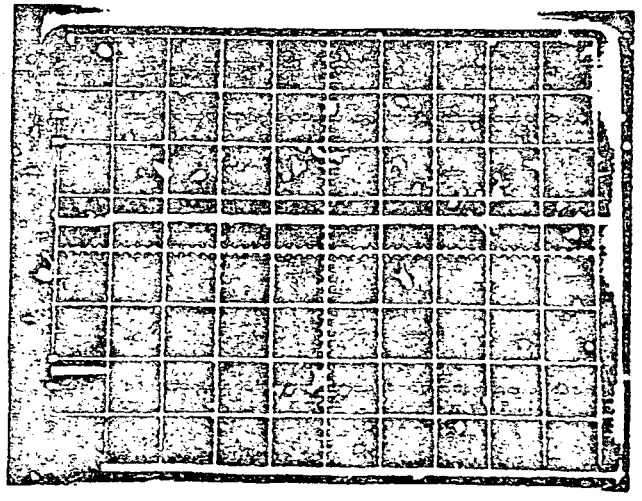
10.4 Performance test (continued)

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV.: 5V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 10msec

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE

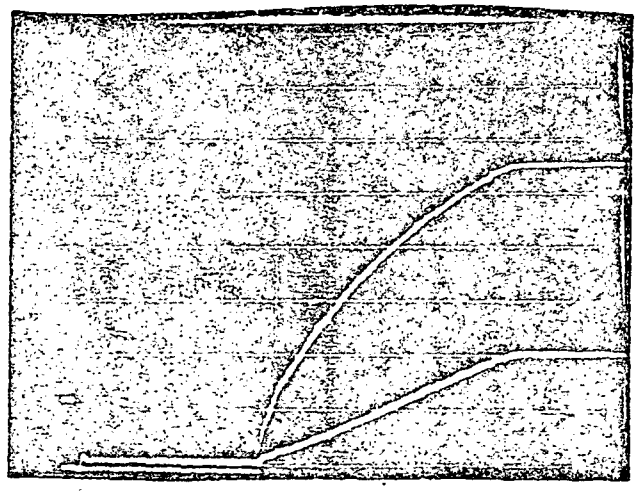


(2V) VOLTAGE/DIV: 5
(2A) CURRENT/DIV: 2
(10mS) SWEEP RATE: 5 msec

10.4 Performance test (continued)

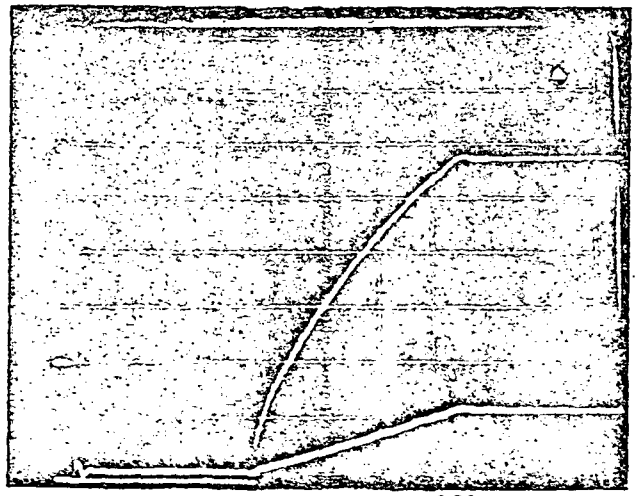
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.17.5	Record that UUT operates correctly.		(checkmark)	✓	✓

5.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V.
(5A) CURRENT/DIV: 5A.
(20mS) SWEEP RATE: 10 msec.

5.10.18.2 Photograph of input bus current and parasitic output voltage as parasitic enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V.
(5A) CURRENT/DIV: 5A.
(20mS) SWEEP RATE: 10 msec.

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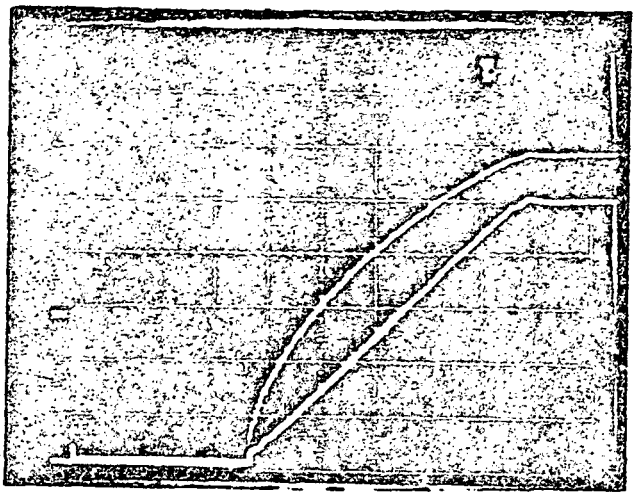
10.4 Performance test (continued)

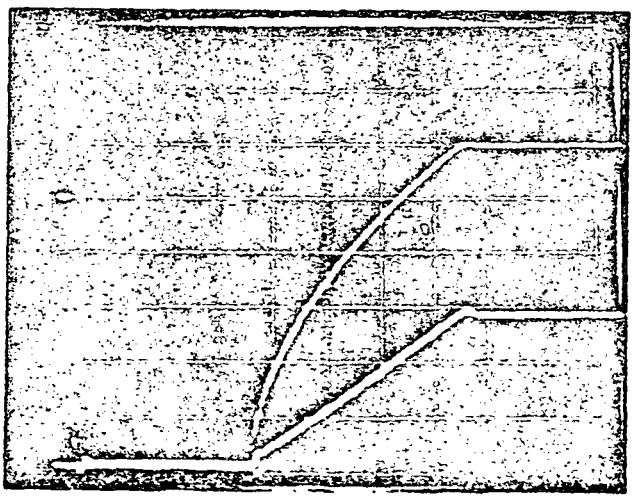
10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 10 m/s

5.10.18.2 Photograph of input bus current and MUX output voltage as parasitic enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE

(5v) Volts/Div: 5V
(5A) Current/Div: 5A
(20mS) Sweep Rate: 10mS



10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.18.4	Undervoltage Trip Point (ON/OFF)	S26-1, S27-1 (S27-3 for RDT)	18.0 ±1.50V	18.00 V.	18.03V.
5.10.18.5	UUT stays OFF			✓	✓
5.10.18.6	Undervoltage Trip Point (OFF/ON)	S26-1, S27-1 (S27-3 for RDT)	19.0 ±1.50V	18.9V	18.9 V
5.10.18.7	Overvoltage Trip Point	S26-1, S27-1 (S27-3 for RDT)	38.0 ± 2V	38.3 V.	38.5V. SCN 2
5.10.18.8	UUT stays OFF			✓	✓
5.10.18.9	UUT turns ON			✓	✓

Feb. 4, 1982
DATE Travis Mobley

Michael K. Brown
W. N. Richmond
TESTER(S)

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HAC TEST S30

10.4 Performance test - Long Form

PROTOFLIGHT NA, OR FLIGHT ✓, S/N 004 TEMPERATURE: 131°F
IN-PROCESS N/A, QUAL N/A, OR ACCEPTANCE ✓
TESTING PHASE Final Hot Soak LINE VOLTAGE: 28.0 VOLTS

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.1.1	Calibrate cmd gen	--	--	✓	✓
5.10.2.1	Input bus current	S26-1, S27-2 (S27-4 for redundant)		0.220 A.	.222 mV
5.10.2.2	MUX output voltage	S26-3, S27-1	30.0 ±0.90V	29.83 V.	30.31 V
5.10.2.3	MUX load current	S26-3, S27-12	3.55 ±0.40A	32.43 V.	4439 mV

The rest of Section 5.10.2 requires only checking voltage - indicate by checkmarks.

5.10.2.4.1	B1 + output voltage	S26-1, S27-5		4.2284 V.	✓
5.10.2.4.2	B1 -	S27-6		✓	✓
5.10.2.4.3	B1 -	S27-5		✓	✓
5.10.2.4.4	B1 +	S27-7		✓	✓
5.10.2.5.1	B2 +	S27-7		✓	✓
5.10.2.5.2	B2 -	S27-8		✓	✓
5.10.2.5.3	B2 -	S27-8		✓	✓
5.10.2.5.4	B2 +	S27-7		✓	✓
5.10.2.6.1	B3 +	S27-9		✓	✓
5.10.2.6.2	B3 -	S27-10		✓	✓
5.10.2.6.3	B3 -	S27-10		✓	✓
5.10.2.6.4	B3 +	S27-9		✓	✓
5.10.2.7.1	B4 +	S27-11		✓	✓
5.10.2.7.2	B4 -	S27-12		✓	✓
5.10.2.7.3	B4 -	S27-12		✓	✓
5.10.2.7.4	B4 +	S26-1, S27-11		✓	✓
5.10.2.8.1	B5,7+	S26-2, S27-1		✓	✓
5.10.2.8.2	B5,7-	S27-2		✓	✓
5.10.2.8.3	B5,7-	S27-2		✓	✓
5.10.2.8.4	B5,7+	S27-1		✓	✓
5.10.2.9.1	B6 +	S27-3		✓	✓
5.10.2.9.2	B6 - output voltage	S26-2, S27-4		✓	✓

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10.4 Performance test (continued)

SEQ. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.2.9.3	Z6 - output voltage	S26-2, S27-4		✓	✓
5.10.2.9.4	Z6 + output voltage	S26-2, S27-3		✓	✓
5.10.2.10.1	SMA HTR + output voltage	S27-5		✓	✓
5.10.2.10.2	-	S27-6		✓	✓
5.10.2.10.3	-	S27-6		✓	✓
5.10.2.10.4	+	S27-5		✓	✓
5.10.2.11.1	-7V	S26-2, S27-7		✓	
5.10.2.11.2	-7V	(S27-8 for RDT)			✓
5.10.2.12.1	+29V	S26-2, S27-9		✓	
		(S27-11 for RDT)			✓
5.10.2.12.2	-29V	S26-2, S27-10		✓	
		(S27-12 for RDT)			✓
5.10.2.12.3	-29V	S26-2, S27-10		✓	✓
5.10.2.12.4	SMA HTR +29V	S26-2, S27-9		✓	✓
5.10.2.13.1	Radiometer	S26-3, S27-2		✓	✓
5.10.2.13.2	Radiometer	S27-2		✓	✓
5.10.2.14.1	CDVU	S27-3		✓	✓
5.10.2.14.2	CDVU	S27-3		✓	✓
5.10.2.15.1	Analog +	S27-4		✓	✓
5.10.2.15.2	Analog -	S27-5		✓	✓
5.10.2.15.3	Analog -	S27-5		✓	✓
5.10.2.15.4	Analog +	S27-4		✓	✓
5.10.2.16.1	Electromech.	S27-6		✓	✓
5.10.2.16.2	Electromech.	S27-6		✓	✓
5.10.2.17.1	Cutgas output voltage	S26-3, S27-7		✓	✓
5.10.3.1	Bus voltage	S26-1, S27-1			
		(S27-3 for RDT)		28.04 (49)	28.02
5.10.3.2	MUX load current	S26-3, S27-12	4.130 ±0.025A	41.26mV	41.31mV
5.10.3.3	Bus current	S26-1, S27-2			
		(S27-4 for RDT)		132.0mV (50)	132.49mV
5.10.3.3.2	BPS Voltage	S26-1, S27-1 S27-3)		28.07V	28.02
5.10.3.3.3	BPS Current	S26-1, S27-2 (S27-4)		132.0mV	132.29mV
5.10.3.3.4	MUX Current	S26-3, S27-12		41.32mV	41.21mV

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.3.4.1	B1 + output voltage	S26-1, S27-5	20.50 ±2.50V	20.65 V. (1)	20.72V
5.10.3.4.2	B1 + output ripple	Look on Scope	<600 mV pk-pk	20 mV.	20 mV
5.10.3.4.3	B1 - output voltage	S26-1, S27-6	-20.50 ±2.50V	-20.66 V. (2)	-20.75
5.10.3.4.4	B1 - output ripple	Look on Scope	<600 mV pk-pk	30 mV.	20 mV
5.10.3.5.1	B2 + output voltage	S26-1, S27-7	20.50 ±2.50V	20.44 V. (3)	20.55 V
5.10.3.5.2	B2 + output ripple	Look on Scope	<600 mV pk-pk	25 mV.	20 mV
5.10.3.5.3	B2 - output voltage	S26-1, S27-8	-20.50 ±2.50V	-20.44 V. (4)	20.57
5.10.3.5.4	B2 - output ripple	Seen on Scope	<600 mV pk-pk	20 mV.	20
5.10.3.6.1	B3 + output voltage	S26-1, S27-9	20.50 ±2.50V	20.55 V. (5)	20.48
5.10.3.6.2	B3 + output ripple	Seen on Scope	<600 mV pk-pk	20 mV.	20
5.10.3.6.3	B3 - output voltage	S26-1, S27-10	-20.50 ±2.50V	-20.44 V. (6)	20.55
5.10.3.6.4	B3 - output ripple	Seen on Scope	<600 mV pk-pk	20 mV.	20
5.10.3.7.1	B4 + output voltage	S26-1, S27-11	20.50 ±2.50V	20.60 V (7)	20.72
5.10.3.7.2	B4 + output ripple	Seen on Scope	<600 mV pk-pk	20 mV.	20
5.10.3.7.3	B4 - output voltage	S26-1, S27-12	-20.50 ±2.50V	-20.63 V (8)	20.73
5.10.3.7.4	B4 - output ripple	Seen on Scope	<600 mV pk-pk	20 mV.	20
5.10.3.8.1	B5,7 + voltage	S26-2, S27-1	20.50 ±2.50V	20.35 V. (9)	20.22
5.10.3.8.2	B5,7 + ripple	Seen on Scope	<600 mV pk-pk	30 mV.	30
5.10.3.8.3	B5,7 - voltage	S26-3, S27-2	-20.50 ±2.50V	-20.34V (10)	-20.25
5.10.3.8.4	B5,7 - ripple	Seen on Scope	<600 mV pk-pk	35 mV.	40
5.10.3.9.1	B6 + voltage	S26-2, S27-3	20.50 ±2.50V	20.53V. (11)	20.55
5.10.3.9.2	B6 + ripple	Seen on Scope	<600 mV pk-pk	20 mV	20
5.10.3.9.3	B6 - voltage	S26-2, S27-4	-20.50 ±2.50V	-20.53V. (12)	-20.60
5.10.3.9.4	B6 - ripple	Seen on Scope	<600 mV pk-pk	20 mV.	20
5.10.3.10.1	SMA Htr + voltage	S26-2, S27-5	21.20 ±2.12V	22.35 V. (13)	22.48
5.10.3.10.2	SMA Htr + ripple	Seen on Scope	<630 mV pk-pk	20 mV.	20
5.10.3.10.3	SMA Htr - voltage	S26-2, S27-6	-21.20 ±2.12 V	-22.34 V. (14)	-22.46
5.10.3.10.4	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	20 mV.	20
5.10.3.11.1	SMA +7V voltage	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	7.70 V (15)	7.78
5.10.3.11.2	SMA +7V output ripple	Seen on Scope	<210 mV pk-pk	20 mV.	30

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.3.12.1	SMA +29V output voltage	S26-2, S27-9 (S27-11 for RDT)	29.50 ±1.50V	30.50V (16)	30.62
5.10.3.12.2	SMA +29V ripple	Seen on Scope	<870 mV, pk-pk	40 mV.	50
5.10.3.12.3	SMA -29V voltage	S26-2, S27-10 (S27-12 for RDT)	-29.50 ±1.50V	-30.48V. (17)	-30.64
5.10.3.12.4	SMA -29V ripple	Seen on Scope	<870 mV pk-pk	50 mV.	50
5.10.3.13.1	MUX voltage	S26-3, S27-1	30.00 ±0.90V	30.28V. (18)	30.32
5.10.3.13.2	MUX ripple	Seen on Scope	<900 mV, pk-pk	45 mV.	50
5.10.3.14.1	Radiometer voltage	S26-3, S27-2	8.50 ±0.85V	8.709 V (19)	8.668
5.10.3.14.2	Radiometer ripple	Seen on Scope	<250 mV pk-pk	30 mV	40
5.10.3.15.1	CDVU voltage	S26-3, S27-3	8.00 ±0.80V	7.760V. (20)	7.765
5.10.3.15.2	CDVU ripple	Seen on Scope	<240 mV pk-pk	20 mV.	20
5.10.3.16.1	Analog + voltage	S26-3, S27-4	21.20 ±2.12V	22.51V (21)	22.55
5.10.3.16.2	Analog + ripple	Seen on Scope	<630 mV pk-pk	30 mV.	20
10.3.16.3	Analog - voltage	S26-3, S27-5	-21.20 ±2.12V	-22.58V (22)	22.61
10.3.16.4	Analog - ripple	Seen on Scope	<630 mV pk-pk	20 mV.	20
5.10.3.17.1	Electromech. voltage	S26-3, S27-6	33.40 ±3.34V	33.14V (23)	33.32
5.10.3.17.2	Electromech. ripple	Seen on Scope	<1.0V pk-pk	30 mV.	50
5.10.3.18.1	Outgas voltage	S26-3, S27-7	100.0 ±12.0V	105.42 V.	104.40
5.10.3.18.2	Outgas output ripple	Seen on Scope	<3.0V pk-pk	150 mV.	150
5.10.4.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		3.824 V.	3.836
5.10.4.2.1	Band 1 + volt. telemtry	S26-4, S28-5		3.772 V.	3.793
5.10.4.2.2	Band 1 -	S28-6		3.761 V.	3.775
5.10.4.3.1	Band 2+	S28-7		3.724 V.	3.750
5.10.4.3.2	Band 2-	S28-8		3.712 V.	3.725
5.10.4.4.1	Band 3+	S28-9		3.742 V.	3.773
5.10.4.4.2	Band 3-	S28-10		3.737 V.	3.750
5.10.4.5.1	Band 4+	S28-11		3.743 V.	3.768
5.10.4.5.2	Band 4-	S26-4, S28-12		3.753 V.	3.770
5.10.4.6.1	Band 5,7+	S26-5, S28-1	3.717	~~3.767~~ MK.	3.710
5.10.4.6.2	Band 5,7- volt. telemetry	S26-5, S28-2		3.707 V.	3.688

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.4.7.1	Band 6 + volt. telemtry	S26-5, S28-3		+3.714 V.	3.726
5.10.4.7.2	Band 6 -	S28-4		3.750 V.	3.761
5.10.4.8.1	SMA Htr +	S28-5		4.089 V.	4.114
5.10.4.8.2	SMA Htr -	S28-6		4.141 V.	4.160
5.10.4.9	SMA +7V	S26-5, S28-7 (S27-8 for RDT)		4.927 V.	4.998
5.10.4.10.1	SMA +29V	S26-5, S28-9 (S27-11 for RDT)		4.181 V.	4.223
5.10.4.10.2	SMA -29V	S26-5, S28-10 (S27-12 for RDT)		3.798 V.	3.852
5.10.4.11	MUX	S26-6, S28-1		4.311 V.	4.298
5.10.4.12	Radiometer	S26-6, S28-2		4.782 V.	4.759
5.10.4.13	CDVU	S26-6, S28-3		4.310 V.	4.365
5.10.4.14.1	Analog + volt. telemtry	S26-6, S28-4		4.023 V.	4.030
5.10.4.14.2	Analog -	S26-6, S28-5		3.957 V.	3.857
.10.4.15	Electromech.	S28-6		4.068 V.	4.092
5.10.4.16	Outgas volt. telemetry	S26-6, S28-7		5.298 V.	5.220
5.10.5.1.1	Analog + load current	S26-3, S27-11	mV ÷ 10 = Amps	15.685 mV	(24) 15.720
5.10.5.1.2	MUX	S26-3, S27-12	mV ÷ 10 = Amps	41.36	(25) 41.23
5.10.5.1.3	Band 1 +	S26-7, S34-1	mV ÷ 0.5 = mA	92.77	(26) 92.14 mA
5.10.5.1.4	Band 1 -	S34-2		-91.94	(27) 92.37
5.10.5.1.5	2 +	S34-3		90.66	(28) 91.17
5.10.5.1.6	2 -	S34-4		-91.52	(29) 91.96
5.10.5.1.7	3 +	S34-5		91.50	(30) 91.28
5.10.5.1.8	3 -	S34-6		-91.27	(31) 91.71
5.10.5.1.9	4 +	S34-7		91.60	(32) 92.15
5.10.5.1.10	4 -	S34-8		-91.29	(33) 91.77
5.10.5.1.11	5,7 +	S34-9		91.52	(34) 90.93
5.10.5.1.12	5,7 -	S34-10		-90.65	(35) 90.27
5.10.5.1.13	6 +	S34-11		47.72	(36) 47.93
5.10.5.1.14	Band 6 -	S26-7, S34-12		-47.55	(37) 47.72
5.10.5.1.15	SMA Htr +	S26-8, S34-1	mV ÷ 0.5 = mA	48.24	(38) 46.46
5.10.5.1.16	SMA Htr - load current	S26-8, S34-2	mV = mA	-9.022	(39) 9.70

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OF POOR QUALITY

HAC TEST S30

TS 16603
Rev B
~~November 1980~~
ECN-2 9-6-81
SCN-3 11/3/81

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDAN.
5.10.5.1.17	SMA +29V load current	S26-8, S34-3	mV ÷ 0.402 = mA	50.98 mV. (46)	51.13.
5.10.5.1.18	SMA -29V	S34-4	mV ÷ 0.402 = mA	-50.62 mV. (47)	50.97
5.10.5.1.19	SMA +7V	S34-5	V ÷ 0.1 = Amps	.2777 V. (43)	.290 V
5.10.5.1.20	Analog -	S34-6	mV ÷ 0.402 = mA	-2.706 V. (43)	.271 V
5.10.5.1.21	Radiometer	S34-9	mV ÷ 0.5 = mA	155.72 mV (44)	155.00
5.10.5.1.22	CDVU	S34-10	mV ÷ 0.5 = mA	.2734 V. (45)	.277 V
5.10.5.1.23	Electromech. load current	S26-8, S34-11	mV ÷ 0.402 = mA	.2107 V. (46)	.212 V
5.10.5.2.1	Bus power supply voltage	S26-1, S27-1 (S27-3 for RDT)		28.09 V (47)	28.036
5.10.5.2.2	Bus input current	S26-1, S27-2 (S27-4 for RDT)	mV ÷ 10 = Amps	132.78 mV (48)	132.55.
5.10.5.2.3	P_{IN} (Section 5.10.5)			372.979	371.621
5.10.5.2.4	P_{IN} (Section 5.10.3)			370.44	371.236
5.10.5.2.5	P_{IN} (avg)			371.71	371.429
5.10.5.2.9	Input current at current limit	26-1, 27-2 (26-1 27-4 Rdt)		27.76 V	198.63 mA 27.54 V
	Input voltage at current limit	27-1 (27-3 Rdt)		30.28 V.	~~30.27 V~~ 30.71 V
	MUX voltage at current limit	26-3, 27-1		54.57 mV.	~~46.79 mA~~
	MUX current at current limit	27-12		162.45 mV.	46.75 mA
5.10.5.3.1	P_{OUT}			272.896	273.81
5.10.5.3.2	Efficiency		≥70%	73.91	~~74.21~~ 2 74.21 %

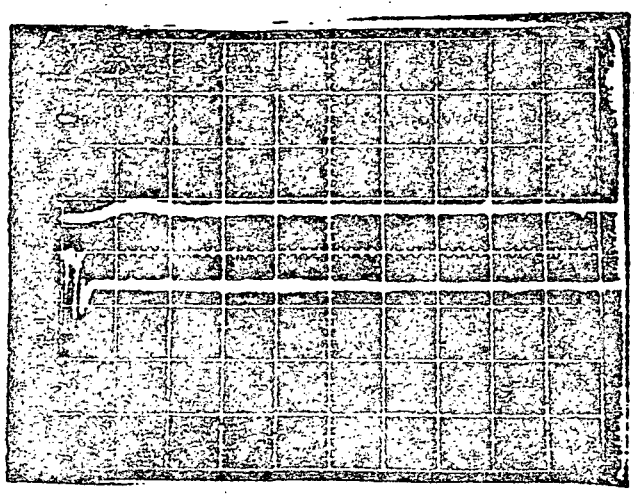
G. Bowden 2/4/82

INPUT POWER #2= 372.979401
INPUT POWER #1= 370.44
AVE INPUT POWER= 371.71
OUTPUT POWER= 272.896
EFFICIENCY = 73.91
INPUT POWER #2= 371.621174
INPUT POWER #1= 371.236826
AVE INPUT POWER= 371.429
OUTPUT POWER= 273.81
EFFICIENCY = 74.21

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDAN
5.10.6.1	+7V output pulsed	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	7.001 V.	7.113

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-PRIMARY SIDE



7.696 V Hi.

7.000 V. Lo.

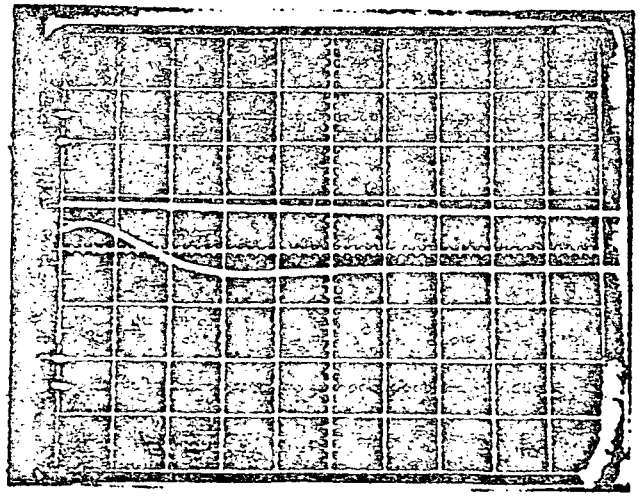
(0.2A) CURRENT/DIV: 2 Amps. D.C

(1V) VOLTAGE/DIV: 2 V

(200uS) SWEEP RATE: 200 μsec.

Zero volts

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load on SMA +7V outputs is being removed - PRIMARY SIDE



2 Amps. D.C

(0.2A) CURRENT/DIV:

(1V) VOLTAGE/DIV: 2V/D.V.

(200uS) SWEEP RATE: 50 μsec.

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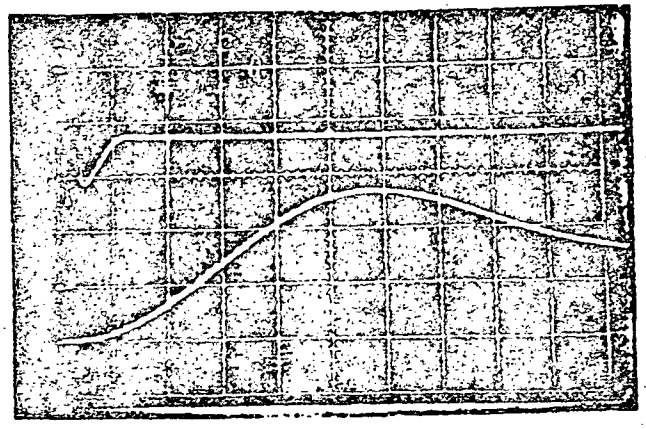
10.4 Performance test (continued)

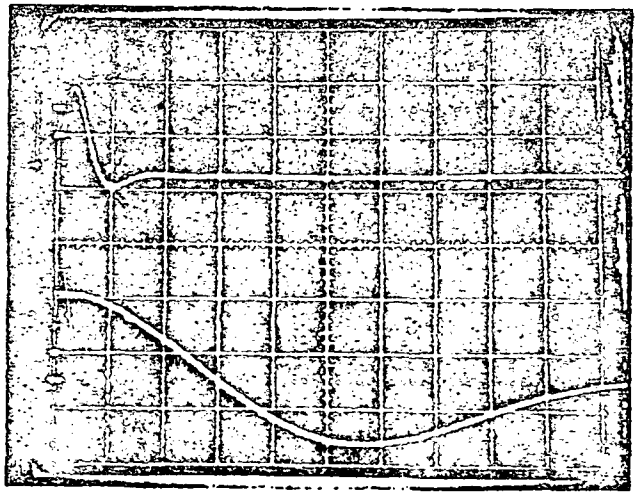
REF. PARA. DESCRIPTION

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-REDUNDANT SIDE



(0.2A) CURRENT/DIV: .2A A.C.
(1V) VOLTAGE/DIV: 1V
(200uS) SWEEP RATE: 200usec

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load is being removed-REDUNDANT SIDE



(0.2A) CURRENT/DIV: .2A A.C.
(1V) VOLTAGE/DIV: 1V
(200uS) SWEEP RATE: 200usec

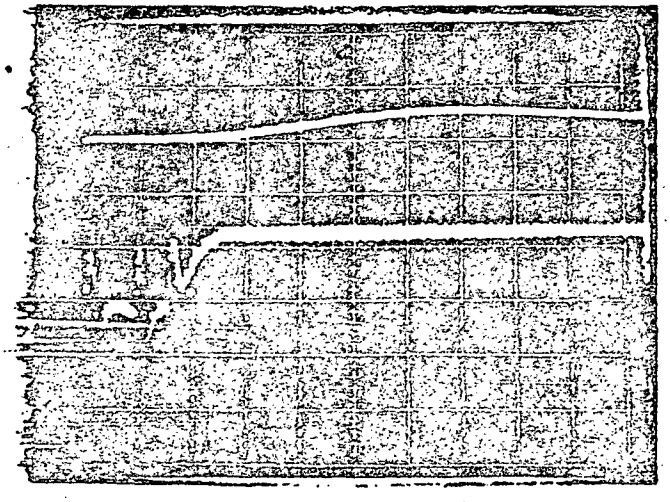
160

HAC TEST S30

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.6.3	Input bus current	S26-1, S27-2 (S27-4 for EDT)		137.87 mV	135.25
5.10.6.4	SMA +7V TM- pulsed	S26-5, S28-7 (S28-8 for EDT)		4.570V ~~4.107~~	4.687
5.10.6.5	SMA +7V load current-pulsed	(S26-8, S34-5		.4560 V	.4621

5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as SMA +7V output is being pulse-loaded-PRIMARY SIDE

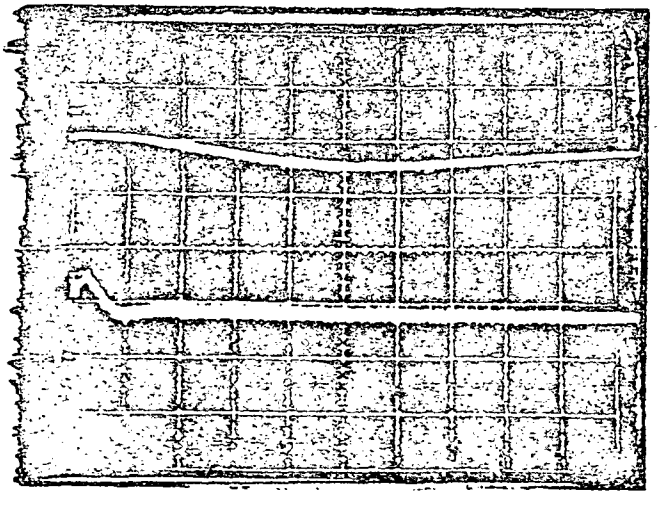


(1A)* SMA CURRENT/DIV: 100 mV.
(NA) BUS CURRENT/DIV: 1 Amp. A.C.
(200uS) SWEEP RATE: 200 μsec.

* Using 0.1 Ω shunt and 100 mV/Div on scope

Sch 2

5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as pulse-load is being removed-PRIMARY SIDE



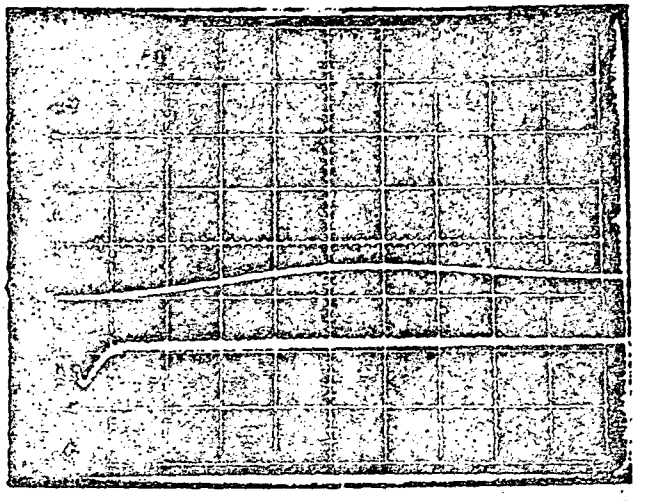
(1A)* SMA CURRENT/DIV: 100mV
(NA) BUS CURRENT/DIV: 1 amp
(200uS) SWEEP RATE: 200 μsec

*Using 0.1 Ω shunt and 100mV/Div on Scope

Sch 2

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION
5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as SMA + 7V output is being pulse loaded - REDUNDANT SIDE

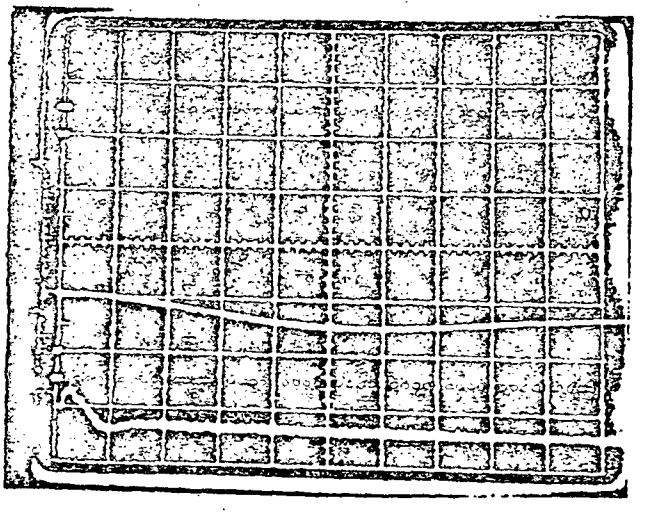


(1A)* SMA CURRENT/DIV: 100mV
(2A) BUS CURRENT/DIV: 1A
(200uS) SWEEP RATE: 200uS

*Using 0.1 Ω shunt and 100 mV/Div on scope.

SCN 2

5.10.6.6 Photograph of transients induced on input bus current and SMA + 7V load current as pulse-load is removed - REDUNDANT SIDE



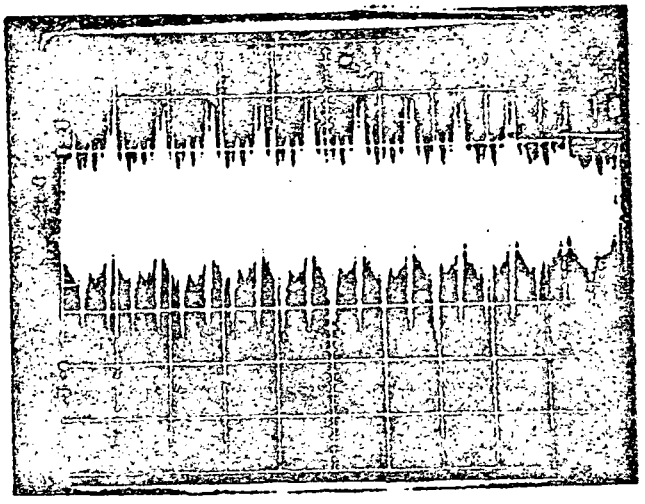
(1A)* SMA CURRENT/DIV: 100mV
(2A) BUS CURRENT/DIV: 1A
(200uS) SWEEP RATE: 200uS

*Using 0.1 Ω shunt and 100mV/Div on scope.

SCN 2

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION
5.10.7.1	Photograph of reflected input current ripple - PRIMARY SIDE



(1mA) CURRENT/DIV: 2 mA.
(10uS) SWEEP RATE: 10 μ sec

5.10.7.1 Photograph of reflected input current ripple - REDUNDANT SIDE

(1mA) CURRENT/DIV: 2 mA.
(10uS) SWEEP RATE: 10 μ sec

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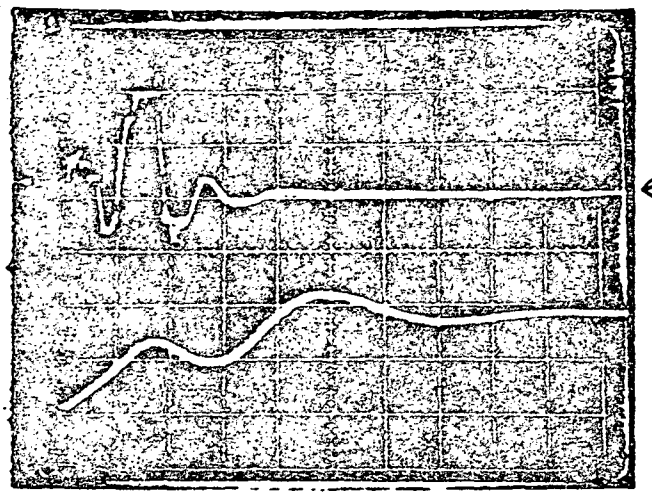
5.10.8.1.1 Input current - full load S26-1, S27-2 (S27-4 for RDT) 132.7 132.73mV

5.10.8.1.2 Input current w/o analog load Same 104.09 106.26mV

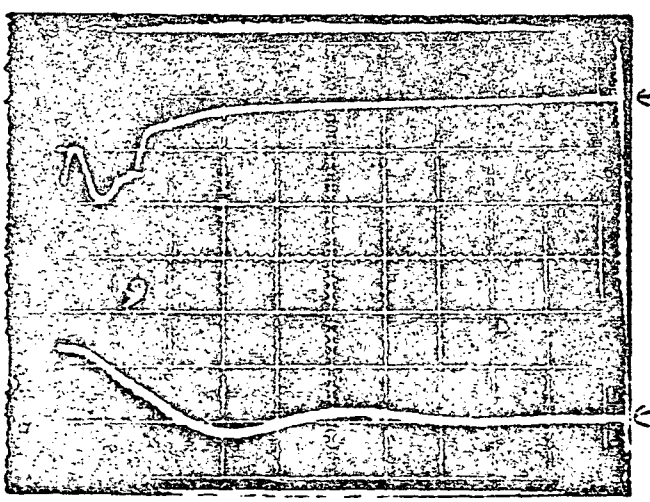
5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is enabled - PRIMARY SIDE



Output Voltage - Loaded
22.50

(2V) VOLTAGE/DIV: 2V/D.V.
(1A) CURRENT/DIV: 1Amp./D.V.
(500uS) SWEEP RATE: 500 μsec.

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is disabled - PRIMARY SIDE



Open Circuit Voltage
26.79V

(5V) VOLTAGE/DIV: 2V/D.V.
(1A) CURRENT/DIV: 1Amp./D.V.
(1mS) SWEEP RATE: 500μsec.

Bus Current

ORIGINAL PAGE IS
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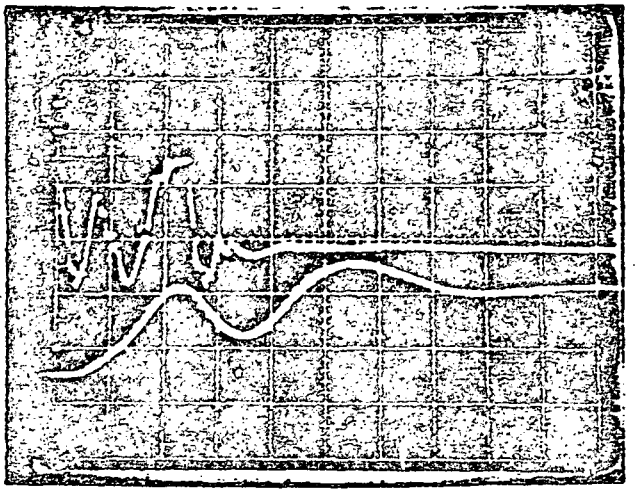
10.4 Performance test (continued)

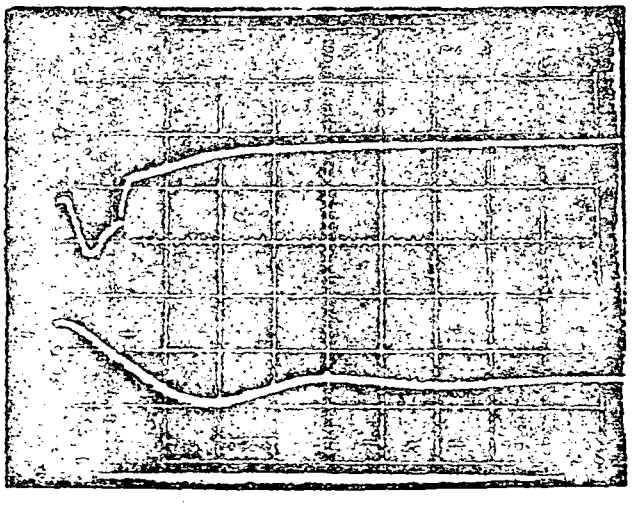
REF. PARA.	DESCRIPTION

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is enabled - REDUNDANT SIDE.



(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(500uS) SWEEP RATE: Secure

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is disabled - REDUNDANT SIDE.



(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(1mS) SWEEP RATE: [illegible]

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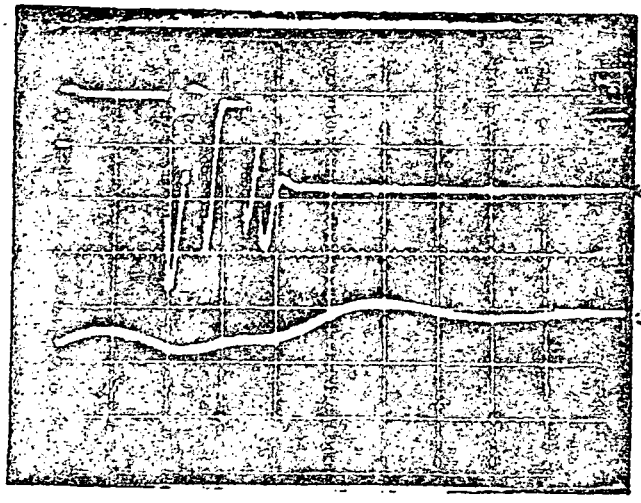
10.4 Performance test (continued)

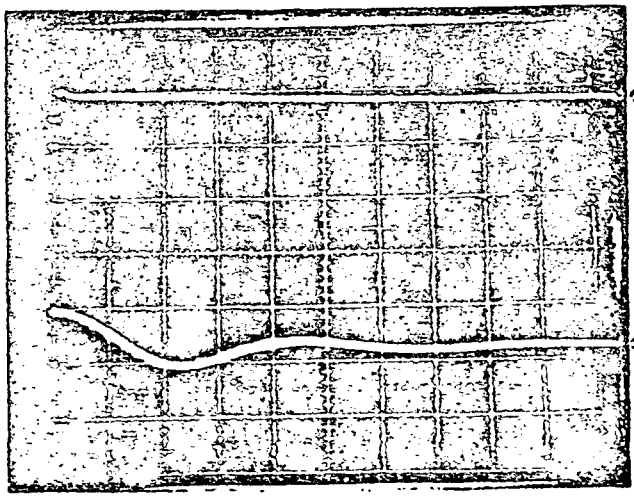
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.2.1	Input bus current w/o SMA +7V load	S26-1, S27-2 (S27-4 for RDT)	M.R. Error 22.074V 22.34 V.	21.91 V	

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is enabled - PRIMARY SIDE.



No load 9.624 V.
Loaded 7.712 V.
Output Voltage 7.712 V.
(5V) VOLTAGE/DIV: 2V/D.V.
(1A) CURRENT/DIV: 1 Amp./D.V.
(200mS) SWEEP RATE: 500 μsec./D.V.
Bus Current

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - PRIMARY SIDE.



Output Voltage 9.624 V.
(2V) VOLTAGE/DIV: 2 Volts/D.V.
(1A) CURRENT/DIV: 1 Amp./D.V.
(2mS) SWEEP RATE: 500 μsec./D.V.
Bus Current

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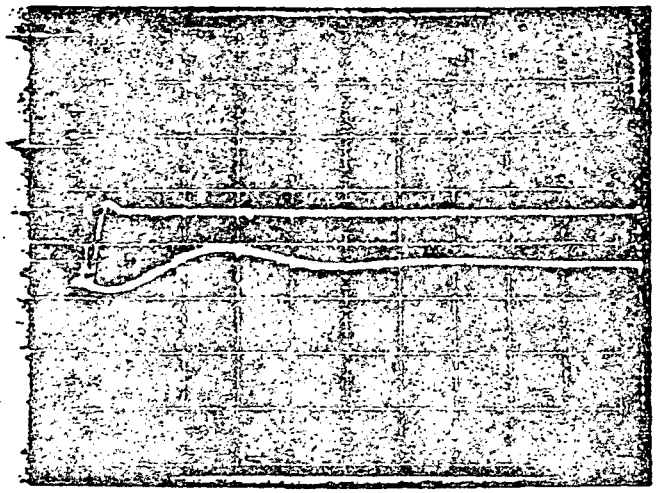
10.4 Performance test (continued)

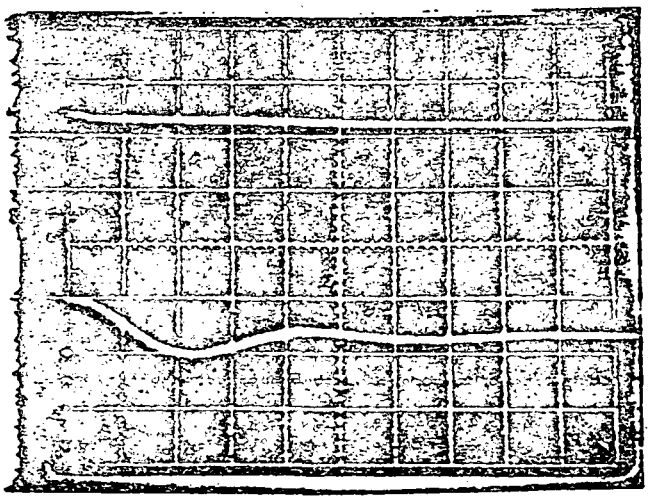
REF. PARA.	DESCRIPTION

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7 output voltag s SMA +7V is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 2 V
(1A) CURRENT/DIV: 1 A
(200uS) SWEEP RATE: 500 usec

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(2mS) SWEEP RATE: 500 usec

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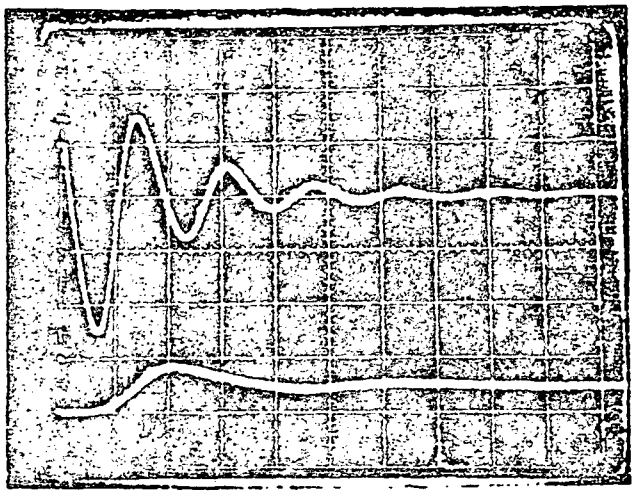
10.4 Performance test (continued)

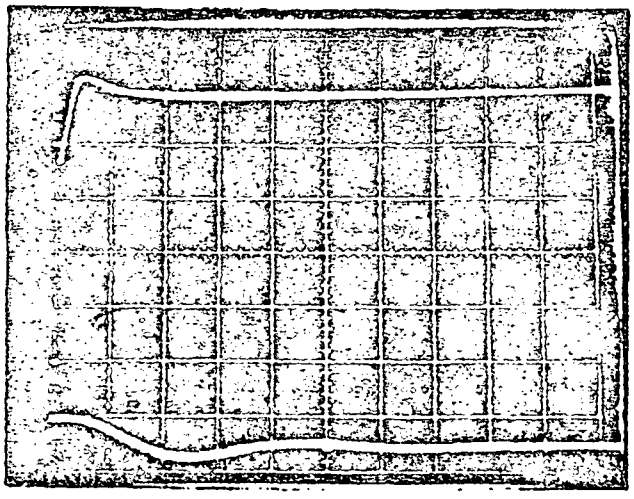
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.2.3	Input bus current w/o SMA ±29V load	S26-1, S27-2 (S27-4 for RDT)		128.93 mV.	129.46mV

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1.0 V./D.V.
(0.5V) CURRENT/DIV: 0.5 Amp./D.V.
(1mS) SWEEP RATE: 500 μ sec./D.V.

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1.0 V/D.V.
(0.5A) CURRENT/DIV: 0.5 Amps./D.V.
(1mS) SWEEP RATE: 500 μ sec./D.V.

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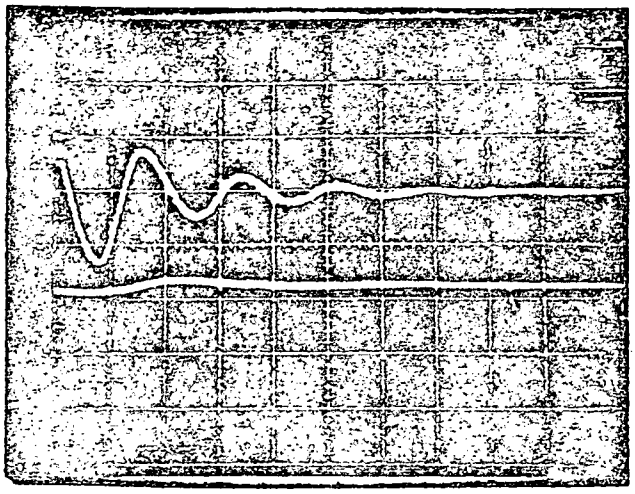
10.4 Performance test (continued)

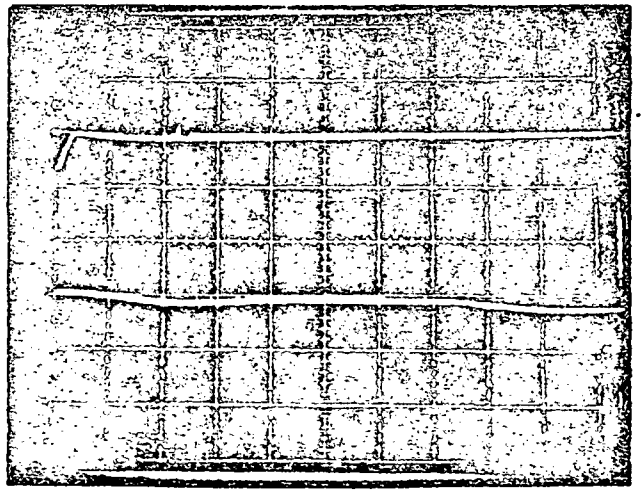
EF. PARA.	DESCRIPTION

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2V
(0.5A) CURRENT/DIV: 1A
(1mS) SWEEP RATE: 500 μsec

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as ±29V is disabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2V
(0.5) CURRENT/DIV: 1A
(1mS) SWEEP RATE: 500 μsec

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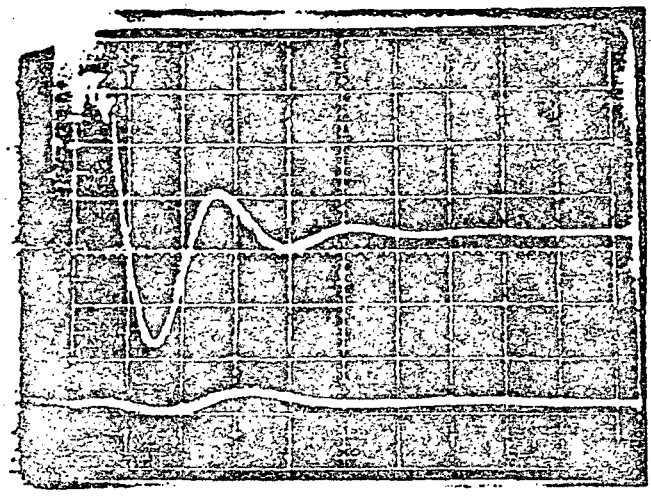
10.4 Performance test (continued)

EF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.3.1	Input bus current w/o CDVU load	S26-1, S27-2 (S27-4 for RDT)		131.03 mV.	130.20 mV

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - PRIMARY SIDE



Loaded 7.647 V.

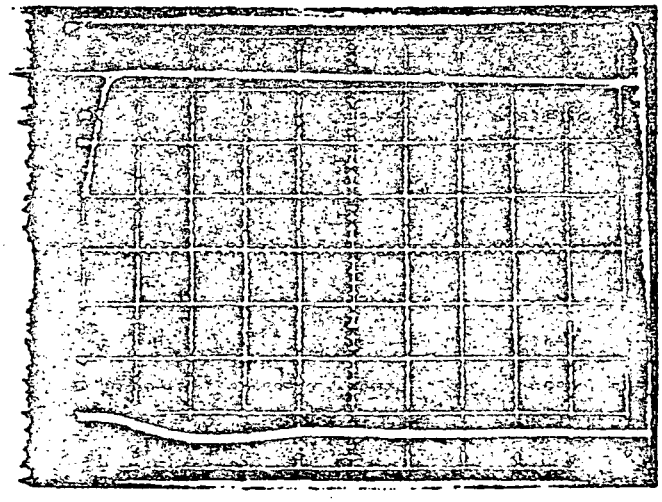
Unloaded 9.460 V.

(2V) VOLTAGE/DIV: 1.0 V./D.V.

(0.5A) CURRENT/DIV: 0.5 Amps./D.V.

(1mS) SWEEP RATE: 500 μsec/D.V.

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1.0 V/D.V.

(0.5V) CURRENT/DIV: 0.5 Amp/D.V.

(1mS) SWEEP RATE: 500 μsec/D.V.

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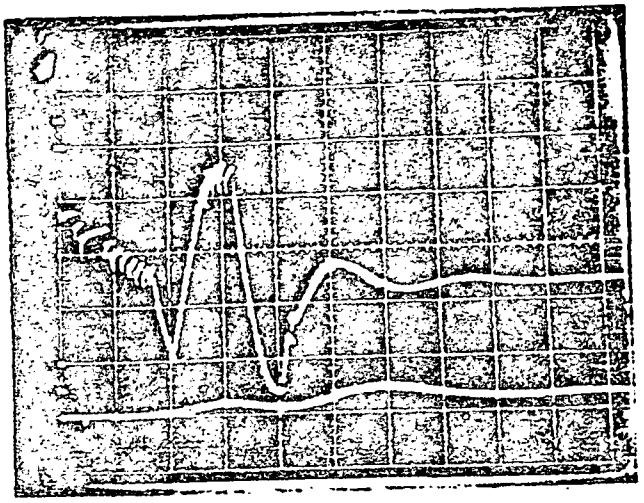
10.4 Performance test (continued)

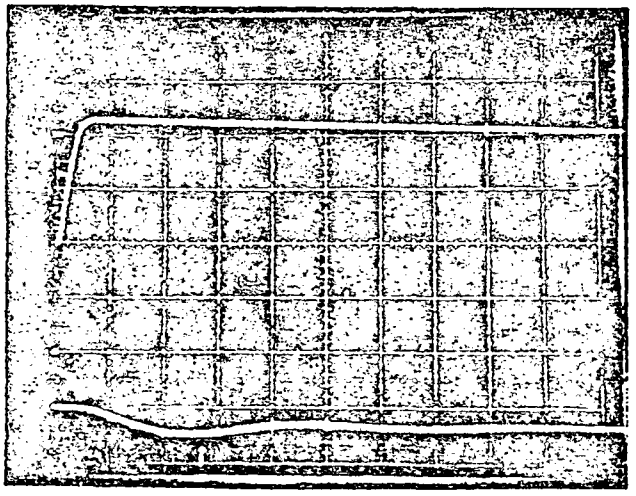
REF. PARA.	DESCRIPTION

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 500 usec

5.10.8.3.2 Photograph as transients induced on input bus current and CDVU output voltage as CDVU is disabled - REDUNDANT SIDE



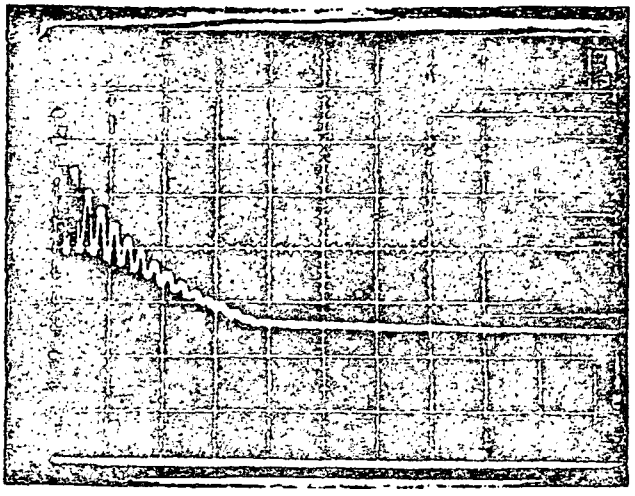
(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 500 usec

171

10.4 Performance test (continued)

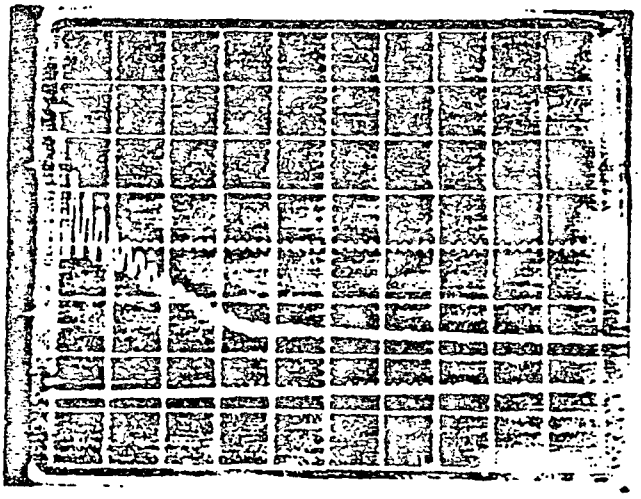
REF. PARA. DESCRIPTION

5.10.9.1 Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V./D.V.
(5A) CURRENT/DIV: 5 Amp./D.V.
(500uS) SWEEP RATE: 500 μsec./D.V.

Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - REDUNDANT SIDE

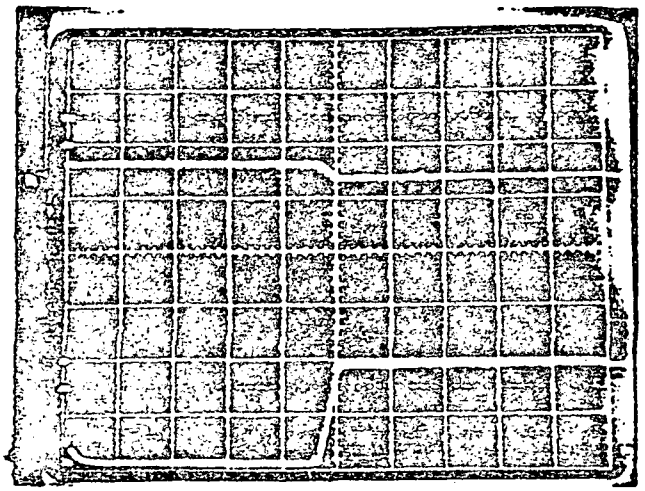


(5V) VOLTAGE/DIV: 5V./D.V.
(5A) CURRENT/DIV: 5 Amp./D.V.
(500uS) SWEEP RATE: 500 μsec./D.V.

172

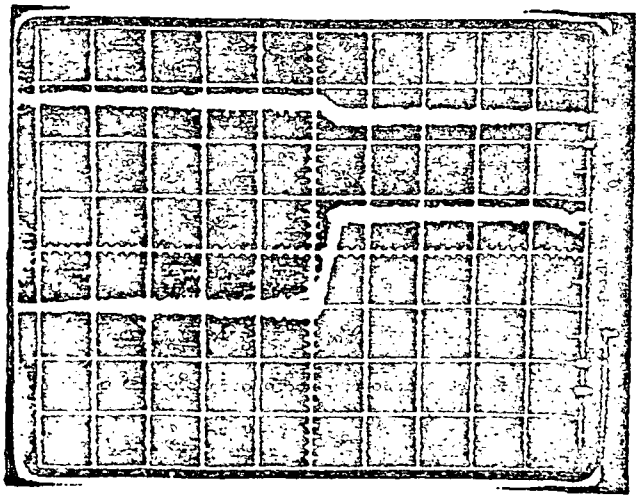
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.9.2	UUT stays off when bus is reapplied.	S1-ON (S2-ON for RDT)	--	✓	✓
5.10.9.?	[illegible] ge and current as ON command				



(5V) VOLTAGE/DIV: 5V/D.V.
(5A) CURRENT/DIV: 5Amps/D.V.
(100mS) SWEEP RATE: 100mS

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - REDUNDANT SIDE



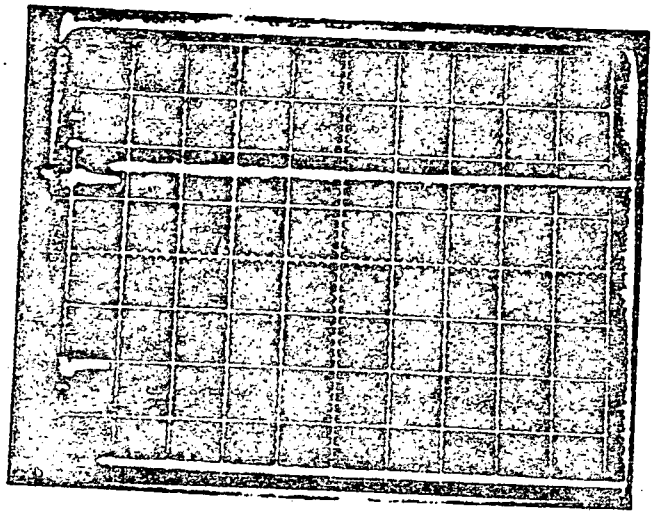
(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(100mS) SWEEP RATE: 100mS

173

10.4 Performance test (continued)

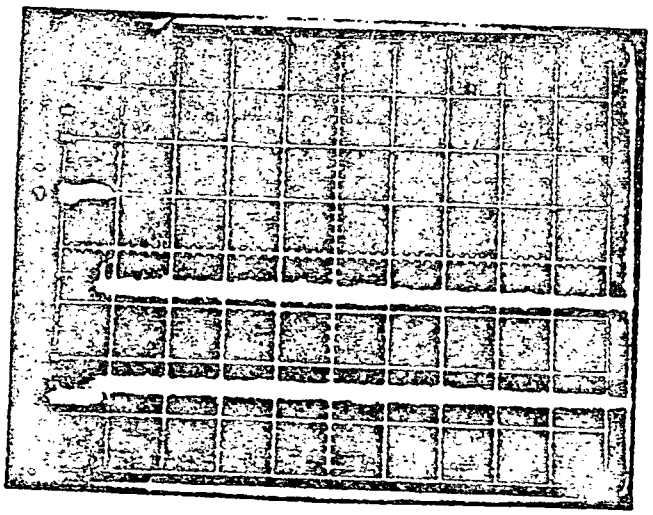
REF. PARA.	DESCRIPTION

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(10mS) SWEEP RATE: 10 mS

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(10mS) SWEEP RATE: 10 mS

174

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	PRIMARY	REDUNDANT
5.10.9.5	Record	S27-2 (S27-4)		132.54	129.99
5.10.9.6	Record	(S27-4 (S27-2)		2.466	22.19mV
	Record	S27-2 (S27-4)		127.63	106.07mV
5.10.9.7	Record that UUT turns on.	(Checkmark)		✓	✓
5.10.10.1	Input bus current AFTER it reads ~ 17A AND input bus voltage reads ~ 21V.	S26-1, S27-2 (S27-4 for RDT)		150.96	150.14mV
5.10.10.2	Input bus voltage with 17.0A load	S26-1, S27-1 (S27-3 for RDT)		28.00	28.02
5.10.10.3	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		4334	4487
5.10.10.4	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3355	3543
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.00	28.02
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		12635	124.15mV
5.10.10.5	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.054	3.076
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.00	28.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		109.40	109.31mV
5.10.10.6	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.537	2.520
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.06	25.07
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		92.14	93.74mV
5.10.10.7	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.072	2.015
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.08	28.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		80.15	79.47mV

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.10.8	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.532	1.527
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.02	29.01
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		63.62mv	61.56mv
5.10.10.9	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.016	1.025
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		29.00	29.03
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		43.39mv	41.93mv
5.10.10.10	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.564V	1.474V
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.00	29.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		31.66mv	29.49mv
5.10.10.11	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.203V	1.246V
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.00	29.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		25.12mv	21.79mv
5.10.10.12	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		-1.362	0.061
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.06	29.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		11.72	12.00
5.10.11.1	Band 1+ output voltage	S26-1, S27-5		23.47	23.91
5.10.11.2	Band 1- output voltage	S27-6		-23.54	-23.42
5.10.11.3	2+	S27-7		23.94	23.29
5.10.11.4	2-	S27-8		-23.95	-23.73
5.10.11.5	3+	S27-9		23.30	23.80
5.10.11.6	3-	S27-10		-23.19	-23.46
5.10.11.7	Band 4+ output voltage	S26-1, S27-11		23.99	23.84

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDAN
5.10.11.8	Band 4- output voltage	S26-1, S27-12		-23.54	-23.59
5.10.11.9	5,7+	S26-2, S27-1		23.12	23.40
5.10.11.10	5,7-	S27-2		-23.06	-23.25
5.10.11.11	6+	S27-3		22.79	23.11
5.10.11.12	Band 6-	S27-4		-23.30	-23.36
5.10.11.13	SMA Htr +	S27-5		24.51	25.24
5.10.11.14	Htr -	S27-6		-25.33	-25.39
5.10.11.15	+7V	S27-7		9.227	N/A
5.10.11	+7V	(S27-8 For RDT)		N/A	9.324
5.10.11	+29V	S27-9		32.39	N/A
5.10.11	+29V	(S27-11 For RDT)		N/A	32.72
5.10.11	-29V	S27-10		-32.84	N/A
	SMA -29V	S26-2, (S27-12 for RDT)		N/A	-32.51
5.10.11.18	Radiometer	S26-3, S27-2		9.768	9.942
5.10.11.19	CDVU	S27-3		9.555	9.590
5.10.11.20	Analog +	S27-4		27.07	27.50
5.10.11.21	Analog -	S27-5		-25.59	-25.87
5.10.11.22	Electromech.	S27-6		41.55	41.22
5.10.11.23	Outgas	S27-7		103.45	102.63
5.10.11.24	Parasitic	S27-9		31.07	N/A
	Parasitic output voltage	S26-3, (S27-10 for RDT)		N/A	31.66
5.10.11.25	Band 1+ TM output	S26-4, S28-5		4.269	4.369
5.10.11.26	1-	S28-6		4.279	4.256
5.10.11.27	2+	S28-7		4.357	4.240
5.10.11.28	2-	S28-8		4.333	4.294
5.10.11.29	3+	S28-9		4.603	4.330
5.10.11.30	3-	S28-10		4.223	4.271
5.10.11.31	4+	S28-11		4.337	4.328
5.10.11.32	4-	S26-4, S28-12		4.275	4.254
5.10.11.33	Band 5,7+ TM output	S26-5, S28-1		4.215	4.276

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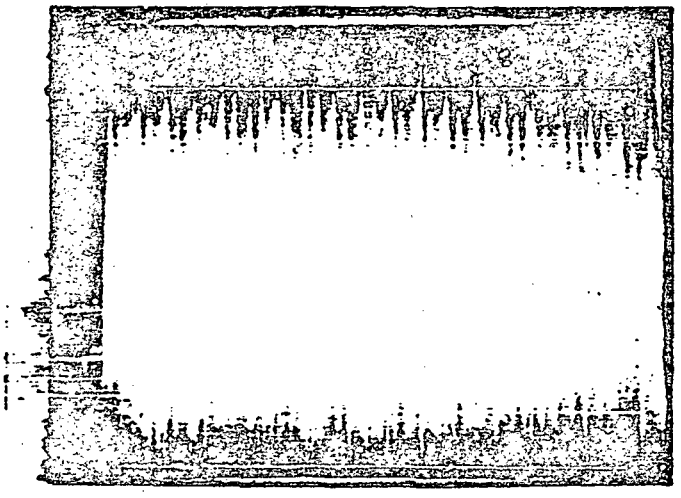
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.11.34	Band 5,7- TM output	S26-5, S28-2		4.198	4.230
5.10.11.35	6+	S28-3		4.120	4.180
5.10.11.36	Band 6-	S28-4		4.249	4.259
5.10.11.37	SMA Htr +	S28-5		4.472	4.608
5.10.11.38	Htr -	S28-6		4.590	4.600
5.10.11.39	+7V	S28-7 (S28-8 for RDT)		5.697	5.740
5.10.11.40	+29V	S28-9 (S28-11 for RDT)		4.417	4.457
5.10.11.41	SMA -29V	S26-5, S28-10 (S28-12 for RDT)		4.036	4.027
5.10.11.42	Radiometer	S26-6, S28-2		5.293	5.389
5.10.11.43	CDVU	S28-3		5.293	5.311
5.10.11.44	Analog +	S28-4		4.865	4.885
5.10.11.45	Analog -	S28-5		4.145	4.241
5.10.11.46	Electromech.	S28-6		5.077	5.037
5.10.11.47	Outgas - TM output	S26-6, S28-7		5.175	5.110
5.10.12.1	Bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.03	28.02
5.10.12.2	Input bus current	S26-1, S27-2 (S27-4 for RDT)		43.06 mV	42.88 mV
5.10.12.3	SMA Htr + output voltage	S26-2, S27-5		21.76	21.88
5.10.12.4	Htr + ripple	Seen on Scope	<630 mV pk-pk	40	40
5.10.12.5	Htr - voltage	S26-2, S27-6		-22.23	-22.43
5.10.12.6	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	40	40
5.10.12.7	CDVU voltage	S26-3, S27-3		7.615	7.754
5.10.12.8	CDVU ripple	Seen on Scope	<240 mV pk-pk	40	40
5.10.12.9	Outgas - output voltage	S26-3, S27-7		96.89	96.37
5.10.12.10	Outgas - output ripple	Seen on Scope	2.50V pk-pk	270 mV	250 mV
~~5.10.12.11~~	~~Parasitic output voltage~~	S26-3, S27-9 (S27-10 for RDT)		30.39	30.44
5.10.12.12	Parasitic output ripple	Seen on Scope	<900 mV pk-pk	90	130

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.13.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		1.969	1.658
5.10.13.2	SMA Htr + output	S26-5, S28-5		3.964	4.66
5.10.13.3	SMA Htr -	S26-5, S28-6		4.631	4.667
5.10.13.4	CDVU	S26-6, S28-3		4.252	4.356
5.10.13.5	Outgas output telemetry	S26-6, S28-7		4.335	4.337

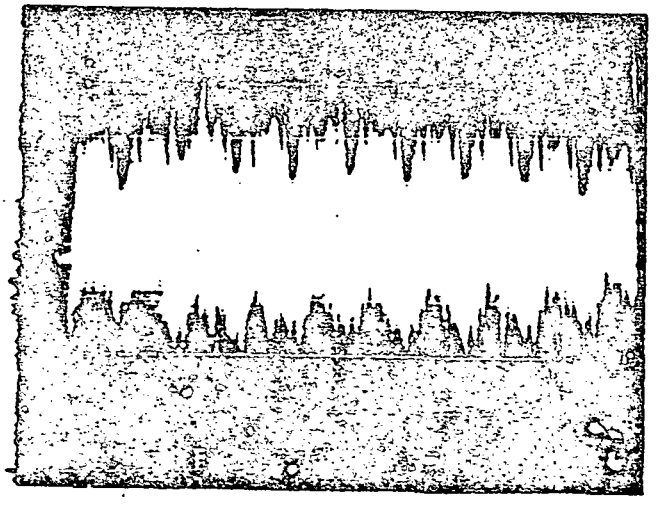
5.10.14.1 Photograph of reflected input current ripple in outgas mode — PRIMARY SIDE



(2mA) CURRENT/DIV: 2 mA A.C.

(10uS) SWEEP RATE: 10 uS

5.10.14.2 Photograph of reflected input current ripple in outgas mode — REDUNDANT SIDE



(2mA) CURRENT/DIV: 2 mA A.C.

(10uS) SWEEP RATE: 10 uS

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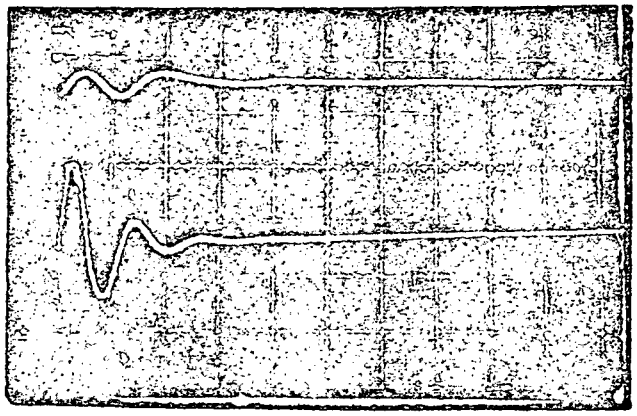
10.4 Performance test (continued)

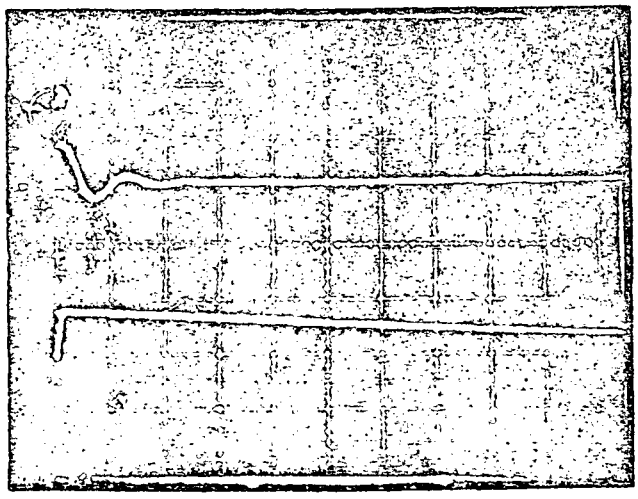
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.1.1	Input current with CDVU off.	S26-1, S27-2 (S27-4 for RDT)		40.80 mA	40.73 mA

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V
(200mA) CURRENT/DIV: 200mA
(1mS) SWEEP RATE: 1mS

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V
(200mA) CURRENT/DIV: 200mA
(2mS) SWEEP RATE: 2mS

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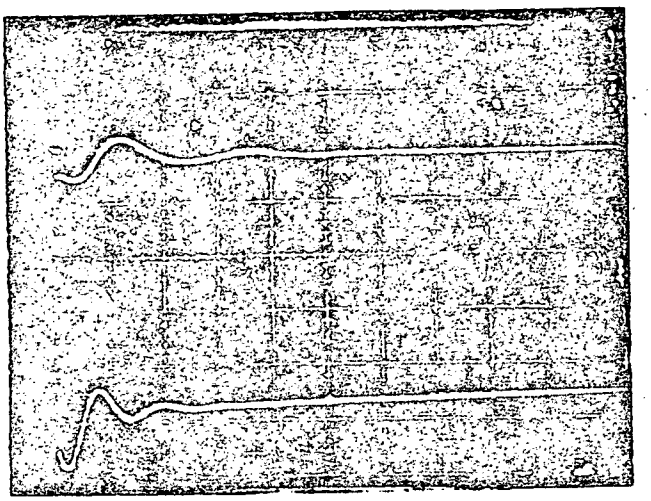
10.4 Performance test (continued)

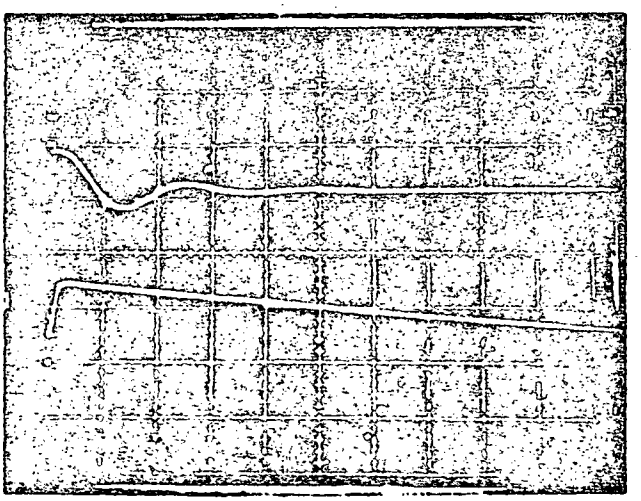
REF. PARA.	DESCRIPTION

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled – REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2V
(200mA) CURRENT/DIV: 200mA
(1mS) SWEEP RATE: 1mS

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled – REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2V
(200mA) CURRENT/DIV: 200mA
(1mS) SWEEP RATE: 1mS

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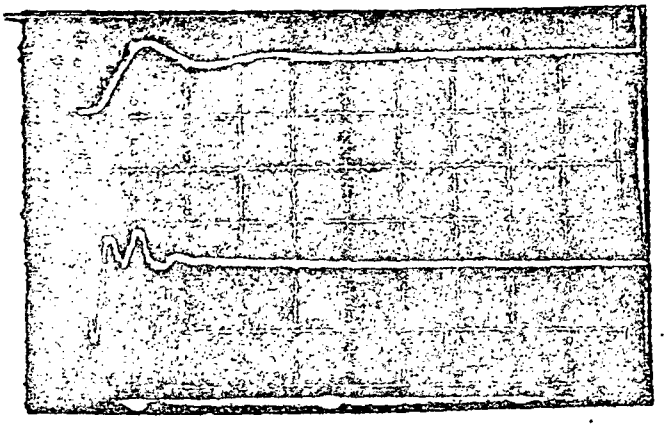
10.4 Performance test (continued)

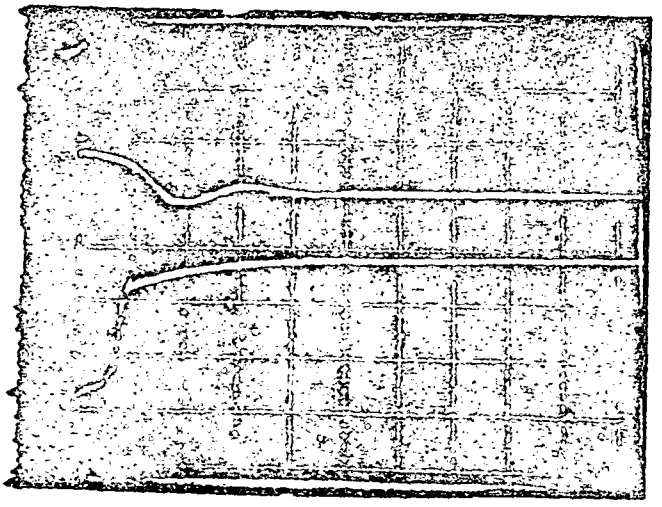
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.2.1	Input bus current with outgas disabled	S26-1, S27-2 (S27-4 for RDT)		14.71mV	15.27mV

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1MS

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(2mS) SWEEP RATE: 1MS

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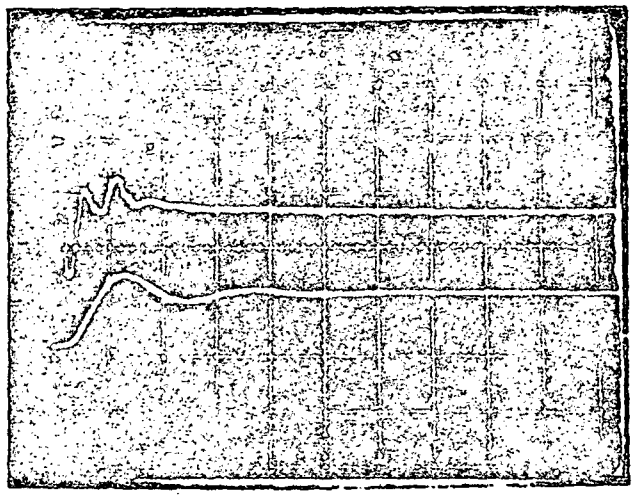
10.4 Performance test (continued)

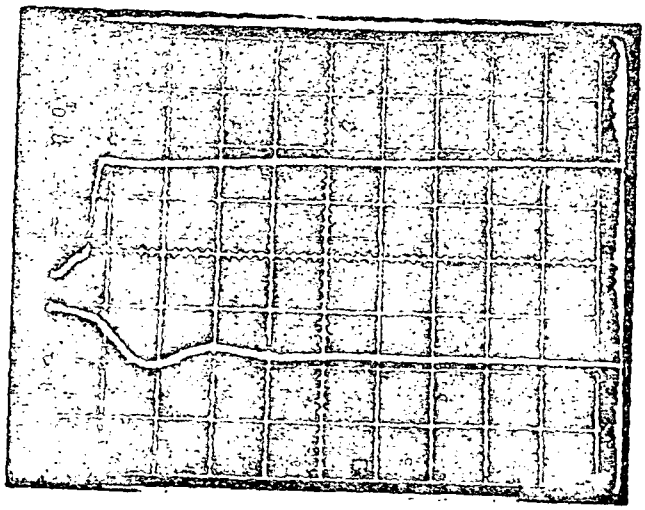
°F. PARA.	DESCRIPTION

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - REDUNDANT SIDE



V) VOLTAGE/DIV: 5V
A) CURRENT/DIV: 2A
00uS) SWEEP RATE: 1mS

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	EVM SWITCH POSITION	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.16.1	BPS voltage	S26-1, S27-1 (S27-3 for RDT)		28.00 (-9)	29.00
5.10.16.2	BPS current	S26-1, S27-2 (S27-4 for RDT)		17.644mV (50)	18.14mV
5.10.16.3	SMA Htr +output voltage	S26-2, S27-5		21.76 (13)	22.01
5.10.16.4	SMA Htr +load current	S26-8, S34-1		46.92 (19)	47.45mV
5.10.16.5	SMA Htr -output voltage	S26-2, S27-6		-22.17 (14)	22.45
5.10.16.6	SMA Htr -load current	S26-8, S34-2		-8.751 (99)	8.868mV
5.10.16.7	CDVU output voltage	S26-3, S27-3		7.614 (20)	7.752
5.10.16.8	CDVU load current	S26-8, S34-10		0276V (45)	.276V
5.10.16.9	Parasitic output voltage	S26-3, S27-9 (S27-10)		30.72 (21)	31.10
5.10.16.10	Parasitic load current	S26-8, S34-7		143.6mV (46)	144.76mV
5.10.16.11	Input power (5.10.16.1 x 5.10.16.2)			49.459	50.792
5.10.16.12	Output power ((5.10.16.3 x 5.10.16.4) + (5.10.16.5 x 5.10.16.6) + (5.10.15.7 x 5.10.16.8) + (5.10.16.9 x 5.10.16.10)	(Primary) (Redundant)		17.33	17.77 17.22
5.10.16.13	Efficiency ((5.10.16.12) ÷ (5.10.16.11)) x 100%			35%	35%

2-6-92 | Sht 2

```
IMA HTR+= 3 941
IMA HTR-=  184
IC TU= 4 136
PARASITIC= 10 959
INPUT POWER= 49 459
OUTPUT POWER= 17 33
EFFICIENCY= 35 %
IMA HTR+= 3 999
IMA HTR-=  199
ICTU= 4 279
PARASITIC= 11 01
INPUT POWER= 50 792
OUTPUT POWER= 17 777
EFFICIENCY= 35 %
```

28v

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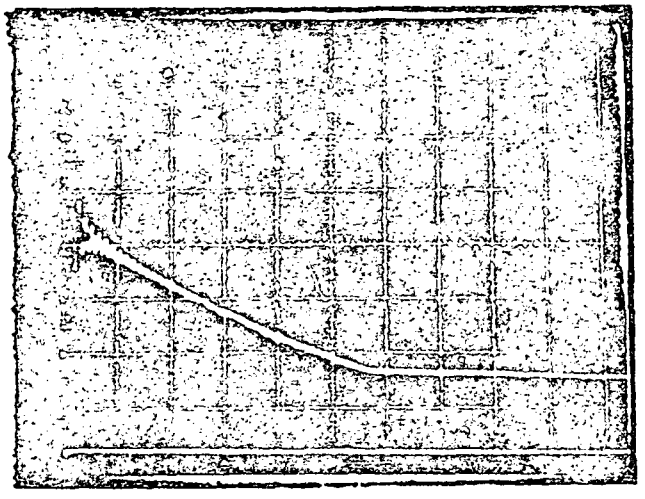
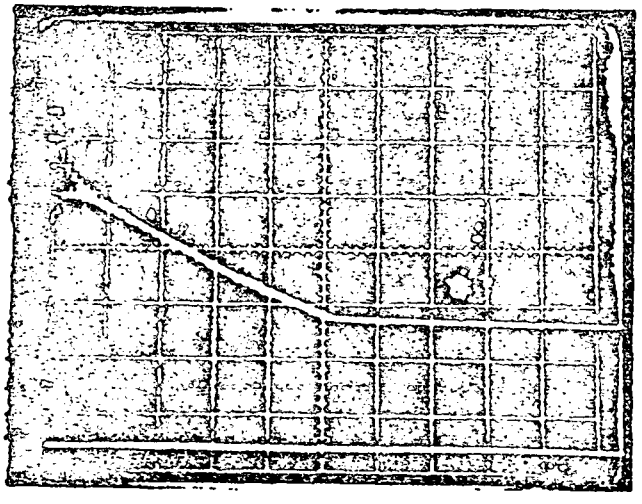
10.4 Performance test (continued)

5.10.17.1 Photograph of input bus current and input bus voltage as is disable - PRIMARY SIDE



V) VOLTAGE/DIV: 5V
A) CURRENT/DIV: 2A
mS) SWEEP RATE: 1mS

5.10.17.1 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

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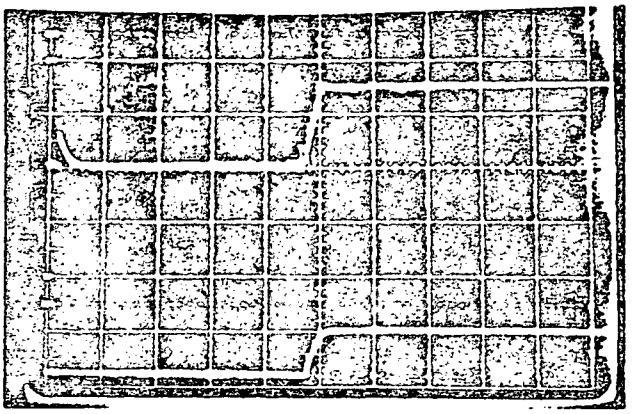
10.4 Performance test (continued)

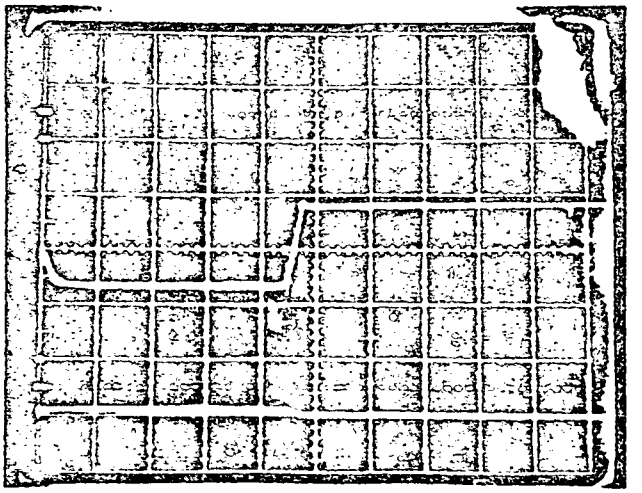
5.10.17.2 Unit stays off (check) ✓ Primary ✓ Redundant

5.10.17.3 Photograph of input bus current and input bus voltage as is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V
(2A) CURRENT/DIV: 2A
(100mS) SWEEP RATE: 100mS

5.10.17.3 Photograph of input bus current and input bus voltage as as is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(100mS) SWEEP RATE: 100mS

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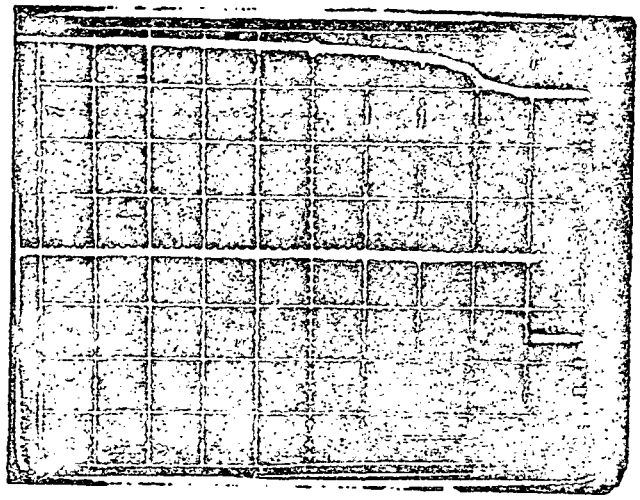
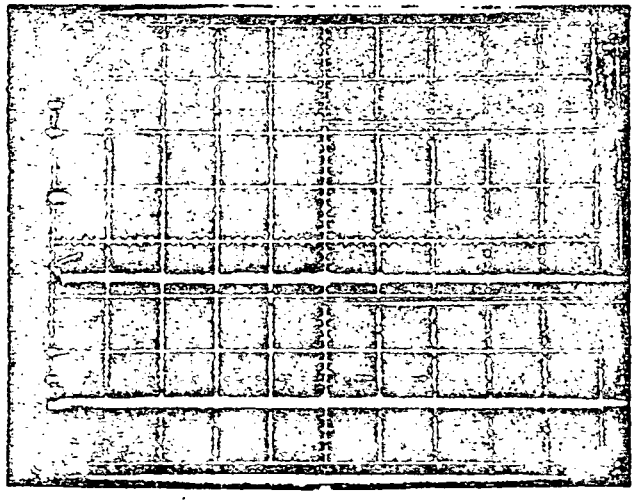
10.4 Performance test (continued)

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled – PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 10 mS

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE

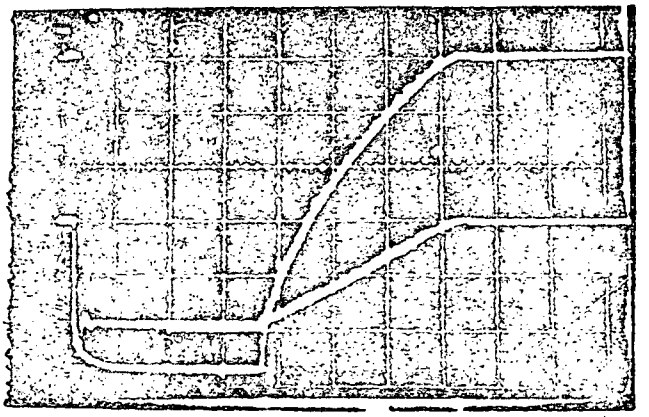


(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 10 mS

10.4 Performance test (continued)

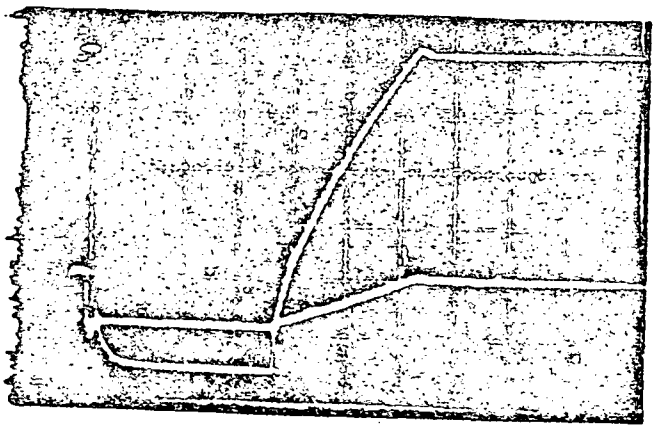
T. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.17.5	Record that UUT operates correctly.		(checkmark)	✓	✓

5.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: ~~20mS~~ 10mS

5.10.18.2 Photograph of input bus current and parasitic output voltage as parasitic enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 10mS

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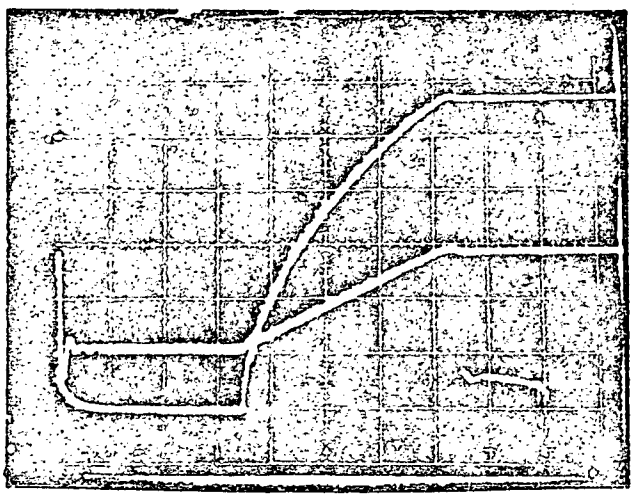
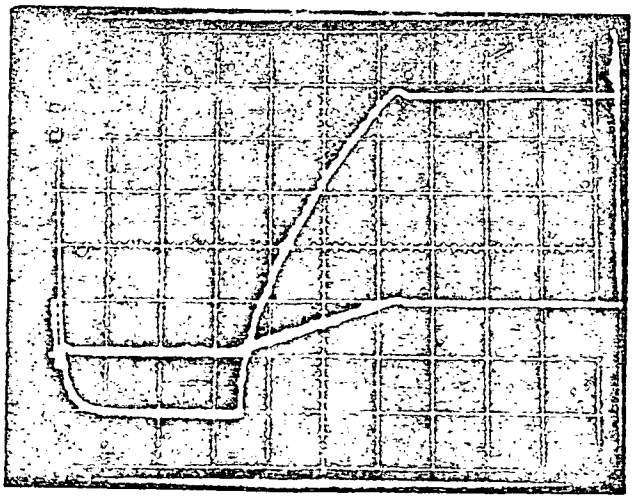
10.4 Performance test (continued)

.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 10mS

5.10.18.2 Photograph of input bus current and MUX output voltage as parasitic enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5v) Volts/Div: 5V
(5A) Current/Div: 5A
(20mS) Sweep Rate: 10mS

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HAC TEST S30

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	UUT SWITCH POSITIONS	LIMITS	MEASURED UUT PRIMARY	MEASURED UUT REDUNDANT
5.10.18.4	Undervoltage Trip Point (ON/OFF)	S26-1, S27-1 (S27-3 for RDT)	18.0 ±1.50V	18.08	18.08
5.10.18.5	UUT stays OFF			✓	✓
5.10.18.6	Undervoltage Trip Point (OFF/ON)	S26-1, S27-1 (S27-3 for RDT)	19.0 ±1.50V	18.87	18.88
5.10.18.7	Overvoltage Trip Point	S26-1, S27-1 (S27-3 for RDT)	38.0 ± 2V	38.25	38.84 SCH 2
5.10.18.8	UUT stays OFF			✓	✓
5.10.18.9	UUT turns ON			✓	✓

2/4/82
DATE

CRAWFORD BROWN
TESTER(S)

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10.4 Performance test - Long Form

PROTOFLIGHT N/A, OR FLIGHT ✓, S/N 004 TEMPERATURE: 131°F
IN-PROCESS N/A, QUAL N/A, OR ACCEPTANCE ✓
TESTING PHASE FINAL HOT - LONG FORM LINE VOLTAGE: 35.0 VOLTS

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.1.1	Calibrate cmd gen	--	--	✓	✓
5.10.2.1	Input bus current	S26-1, S27-2 (S27-4 for redundant)		.218A	.216A
5.10.2.2	MUX output voltage	S26-3, S27-1	30.0 ±0.90V	30.4C	30.26
5.10.2.3	MUX load current	S26-3, S27-12	3.55 ±0.40A	3.3C	3.29

The rest of Section 5.10.2 requires only checking voltage - indicate by checkmarks.

5.10.2.4.1	B1 + output voltage	S26-1, S27-5	✓	✓
5.10.2.4.2	B1 -	S27-6	✓	✓
5.10.2.4.3	B1 -	S27-5	✓	✓
5.10.2.4.4	B1 +	S27-7	✓	✓
5.10.2.5.1	B2 +	S27-7	✓	✓
5.10.2.5.2	B2 -	S27-8	✓	✓
5.10.2.5.3	B2 -	S27-8	✓	✓
5.10.2.5.4	B2 +	S27-7	✓	✓
5.10.2.6.1	B3 +	S27-9	✓	✓
5.10.2.6.2	B3 -	S27-10	✓	✓
5.10.2.6.3	B3 -	S27-10	✓	✓
5.10.2.6.4	B3 +	S27-9	✓	✓
5.10.2.7.1	B4 +	S27-11	✓	✓
5.10.2.7.2	B4 -	S27-12	✓	✓
5.10.2.7.3	B4 -	S27-12	✓	✓
5.10.2.7.4	B4 +	S26-1, S27-11	✓	✓
5.10.2.8.1	B5,7+	S26-2, S27-1	✓	✓
5.10.2.8.2	B5,7-	S27-2	✓	✓
5.10.2.8.3	B5,7-	S27-2	✓	✓
5.10.2.8.4	B5,7+	S27-1	✓	✓
5.10.2.9.1	B6 +	S27-3	✓	✓
5.10.2.9.2	B6 - output voltage	S26-2, S27-4	✓	✓

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.2.9.3	B6 - output voltage	S26-2, S27-4		✓	✓
5.10.2.9.4	B6 + output voltage	S26-2, S27-3		✓	✓
5.10.2.10.1	SMA ~~ER~~ + output voltage	S27-5		✓	✓
5.10.2.10.2	-	S27-6		✓	✓
5.10.2.10.3	-	S27-6		✓	✓
5.10.2.10.4	+	S27-5		✓	✓
5.10.2.11.1	-7V	S26-2, S27-7		✓	✓
5.10.2.11.2	-7V	(S27-8 for RDT)		✓	✓
5.10.2.12.1	+29V	S26-2, S27-9			
		(S27-11 for RDT)		✓	✓
5.10.2.12.2	-29V	S26-2, S27-10			
		(S27-12 for RDT)		✓	✓
5.10.2.12.3	-29V	S26-2, S27-10		✓	✓
5.10.2.12.4	SMA ~~ER~~ +29V	S26-2, S27-9		✓	✓
5. 5.10.2.13.1	Radiometer	S26-3, S27-2		✓	✓
5.10.2.13.2	Radiometer	S27-2		✓	✓
5.10.2.14.1	CDVU	S27-3		✓	✓
5.10.2.14.2	CDVU	S27-3		✓	✓
5.10.2.15.1	Analog +	S27-4		✓	✓
5.10.2.15.2	Analog -	S27-5		✓	✓
5.10.2.15.3	Analog -	S27-5		✓	✓
5.10.2.15.4	Analog +	S27-4		✓	✓
5.10.2.16.1	Electromech.	S27-6		✓	✓
5.10.2.16.2	Electromech.	S27-6		✓	✓
5.10.2.17.1	Outgas output voltage	S26-3, S27-7		✓	✓
5.10.3.1	Bus voltage	S26-1, S27-1			
		(S27-3 for RDT)		35.01 (49)	35.00
5.10.3.2	MUX load current	S26-3, S27-12	4.130 ±0.025A	41.43mV	41.36mV
5.10.3.3	Bus current	S26-1, S27-2			
		(S27-4 for RDT)		107.54 (50)	105.57mV
5. 5.10.3.3.2	BPS Voltage	S26-1, S27-1 S27-3)		35.00	35.00
5.10.3.3.3	BPS Current	S26-1, S27-2 (S27-4)		107.19mV	105.13mV
5.10.3.3.4	MUX Current	S26-3, S27-12		41.37mV	41.31mV

SCN-1

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.3.4.1	B1 + output voltage	S26-1, S27-5	20.50 ±2.50V	20.62 (1)	20.81
5.10.3.4.2	B1 + output ripple	Lock on Scope	<600 mV pk-pk	20	20
5.10.3.4.3	B1 - output voltage	S26-1, S27-6	-20.50 ±2.50V	-20.63 (2)	20.93
5.10.3.4.4	B1 - output ripple	Look on Scope	<600 mV pk-pk	20	20
5.10.3.5.1	B2 + output voltage	S26-1, S27-7	20.50 ±2.50V	20.45 (3)	20.67
5.10.3.5.2	B2 + output ripple	Look on Scope	<600 mV pk-pk	20	20
5.10.3.5.3	B2 - output voltage	S26-1, S27-8	-20.50 ±2.50V	-20.48 (4)	20.69
5.10.3.5.4	B2 - output ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.6.1	B3 + output voltage	S26-1, S27-9	20.50 ±2.50V	20.53 (5)	20.60
5.10.3.6.2	B3 + output ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.6.3	B3 - output voltage	S26-1, S27-10	-20.50 ±2.50V	-20.48 (6)	20.69
5.10.3.6.4	B3 - output ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.7.1	B4 + output voltage	S26-1, S27-11	20.50 ±2.50V	20.59 (7)	20.81
5.10.3.7.2	B4 + output ripple	Seen on Scope	<600 mV pk-pk	25	20
.10.3.7.3	B4 - output voltage	S26-1, S27-12	-20.50 ±2.50V	-20.62 (8)	20.82
5.10.3.7.4	B4 - output ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.8.1	B5,7 + voltage	S26-2, S27-1	20.50 ±2.50V	20.20 (9)	20.20
5.10.3.8.2	B5,7 + ripple	Seen on Scope	<600 mV pk-pk	40	40
5.10.3.8.3	B5,7 - voltage	S26-3, S27-2	-20.50 ±2.50V	-20.19 (10)	20.23
5.10.3.8.4	B5,7 - ripple	Seen on Scope	<600 mV pk-pk	40	40
5.10.3.9.1	B6 + voltage	S26-2, S27-3	20.50 ±2.50V	20.40 (11)	20.57
5.10.3.9.2	B6 + ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.9.3	B6 - voltage	S26-2, S27-4	-20.50 ±2.50V	-20.41 (12)	20.59
5.10.3.9.4	B6 - ripple	Seen on Scope	<600 mV pk-pk	20	20
5.10.3.10.1	SMA Htr + voltage	S26-2, S27-5	21.20 ±2.12V	22.23 (13)	22.44
5.10.3.10.2	SMA Htr + ripple	Seen on Scope	<630 mV pk-pk	20	20
5.10.3.10.3	SMA Htr - voltage	S26-2, S27-6	-21.20 ±2.12V	-22.72 (14)	22.96
5.10.3.10.4	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	20	20
5.10.3.11.1	SMA +7V voltage	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	7.71 (15)	7.81
5.10.3.11.2	SMA +7V output ripple	Seen on Scope	<210 mV pk-pk	30	40

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.3.12.1	SML +29V output voltage	S26-2, S27-9 (S27-11 for RDT)	29.50 ±1.50V	30.41 (16)	30.68
5.10.3.12.2	SMA +29V ripple	Seen on Scope	<870 mV, pk-pk	40	50
5.10.3.12.3	SMA -29V voltage	S26-2, S27-10 (S27-12 for RDT)	-29.50 ±1.50V	30.39 (17)	30.70
5.10.3.12.4	SMA -29V ripple	Seen on Scope	<870 mV pk-pk	50	50
5.10.3.13.1	MUX voltage	S26-3, S27-1	30.00 ±0.90V	31.06 (18)	30.25
5.10.3.13.2	MUX ripple	Seen on Scope	<900 mV, pk-pk	60	70
5.10.3.14.1	Radiometer voltage	S26-3, S27-2	6.50 ±0.85V	5.621 (19)	5.634
5.10.3.14.2	Radiometer ripple	Seen on Scope	<250 mV pk-pk	26	40
5.10.3.15.1	CDVU voltage	S26-3, S27-3	8.00 ±0.80V	7.633 (20)	7.766
5.10.3.15.2	CDVU ripple	Seen on Scope	<240 mV pk-pk	20	20
5.10.3.16.1	Analog + voltage	S26-3, S27-4	21.20 ±2.12V	22.35 (21)	22.50
5.10.3.16.2	Analog + ripple	Seen on Scope	<630 mV pk-pk	30	40
5.10.3.16.3	Analog - voltage	S26-3, S27-5	-21.20 ±2.12V	22.42 (22)	22.56
5.10.3.16.4	Analog - ripple	Seen on Scope	<630 mV pk-pk	20	20
5.10.3.17.1	Electromech. voltage	S26-3, S27-6	33.40 ±3.34V	33.07 (23)	33.43
5.10.3.17.2	Electromech. ripple	Seen on Scope	<1.0V pk-pk	30	60
5.10.3.18.1	Outgas voltage	S26-3, S27-7	100.0 ±12.0V	106.95	105.2 (24)
5.10.3.18.2	Outgas output ripple	Seen on Scope	<3.0V pk-pk	225	225
5.10.4.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		2.975	3.073
5.10.4.2.1	Band 1 + volt. telemetry	S26-4, S28-5		3.766	3.811
5.10.4.2.2	Band 1 -	S28-6		3.755	3.790
5.10.4.3.1	Band 2+	S28-7		3.722	3.772
5.10.4.3.2	Band 2-	S28-8		3.710	3.748
5.10.4.4.1	Band 3+	S28-9		3.737	3.754
5.10.4.4.2	Band 3-	S28-10		3.732	3.771
5.10.4.5.1	Band 4+	S28-11		3.740	3.785
5.10.4.5.2	Band 4-	S26-4, S28-12		3.749	3.787
5.10.4.6.1	Band 5,7+	S26-5, S28-1		3.684	3.713
5.10.4.6.2	Band 5,7- volt. telemetry	S26-5, S28-2		3.677	3.681

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.4.7.1	Band 6 + volt. telemtry	S26-5, S28-3		3.690	3.725
5.10.4.7.2	Band 6 -	S28-4		3.725	3.760
5.10.4.8.1	SMA Htr +	S28-5		4.059	4.105
5.10.4.8.2	SMA Htr -	S28-6		4.118	4.161
5.10.4.9	SMA +7V	S26-5, S27-7 (S27-8 for RDT)		4.929	5.021
5.10.4.10.1	SMA +29V	S26-5, S28-9 (S27-11 for RDT)		4.166	4.230
5.10.4.10.2	SMA -29V	S26-5, S28-10 (S27-12 for RDT)		3.517	3.623
5.10.4.11	MUX	S26-6, S28-1		4.284	4.293
5.10.4.12	Radiometer	S26-6, S28-2		4.721	4.739
5.10.4.13	CDVU	S26-6, S28-3		4.292	4.362
5.10.4.14.1	Analog + volt. telemtry	S26-6, S28-4		3.945	4.023
5.10.4.14.2	Analog -	S26-6, S28-5		3.930	3.949
.10.4.15	Electromech.	S28-6		4.060	4.105
5.10.4.16	Outgas volt. telemetry	S26-6, S28-7		5.348	5.261
5.10.5.1.1	Analog + load current	S26-3, S27-11 mV ÷ 10 = Amps		15.55mV (24)	15.70mV
5.10.5.1.2	MUX	S26-3, S27-12 mV ÷ 10 = Amps		41.42mV (25)	41.55mV
5.10.5.1.3	Band 1 +	S26-7, S34-1 mV ÷ 0.5 = mA		91.65mV (26)	92.50mV
5.10.5.1.4	Band 1 -	S34-2		91.55mV (27)	92.74mV
5.10.5.1.5	2 +	S34-3		48.69mV (28)	91.69
5.10.5.1.6	2 -	S34-4		91.55mV (29)	92.50
5.10.5.1.7	3 +	S34-5		91.xxmV (30)	91.76
5.10.5.1.8	3 -	S34-6		91.22mV (31)	92.19
5.10.5.1.9	4 +	S34-7		91.55mV (32)	92.55
5.10.5.1.10	4 -	S34-8		91.2xmV (33)	92.17
5.10.5.1.11	5,7 +	S34-9		90.xxmV (34)	90.85
5.10.5.1.12	5,7 -	S34-10		xx.xxmV (35)	92.18
5.10.5.1.13	6 +	S34-11		xx.xxmV (36)	47.81
5.10.5.1.14	Band 6 -	S26-7, S34-12		xx.xxmV (37)	47.20
.10.5.1.15	SMA Htr +	S26-8, S34-1 mV ÷ 0.5 = mA		xx.xxmV (38)	85.36
5.10.5.1.16	SMA Htr - load current	S26-8, S34-2 mV = mA		9.973mV (39)	9.969

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10.4 Performance test (continued)

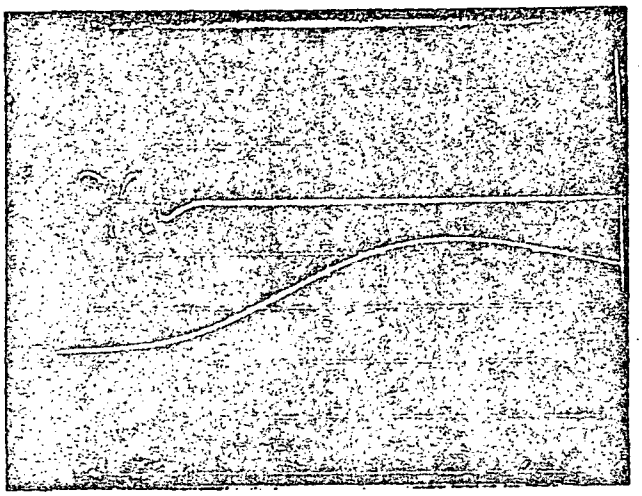
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.5.1.17	SMA +29V load current	S26-8, S34-3	mV ÷ 0.402 = mA	50.75 mA (40)	51.25
5.10.5.1.18	SMA -29V	S34-4	mV ÷ 0.402 = mA	50.53 mA (41)	51.05
5.10.5.1.19	SMA +7V	S34-5	V ÷ 0.1 = Amps	.278 V (42)	.281
5.10.5.1.20	Analog -	S34-6	mV ÷ 0.402 = mA	.265 V (43)	.270
5.10.5.1.21	Radiometer	S34-9	mV ÷ 0.5 = mA	154.13 mA (44)	154.38
5.10.5.1.22	CDVU	S34-10	mV ÷ 0.5 = mA	.272 V (45)	.277
5.10.5.1.23	Electromech. load current	S26-8, S34-11	mV ÷ 0.402 = mA	.210 V (46)	.212
5.10.5.2.1	Bus power supply voltage	S26-1, S27-1 (S27-3 for RDT)		35.00 V (47)	35.00
5.10.5.2.2	Bus input current	S26-1, S27-2 (S27-4 for RDT)	mV ÷ 10 = Amps	107.67 mA (48)	105.67
5.10.5.2.3	P_{IN} (Section 5.10.5)			376.845	380.345
5.10.5.2.4	P_{IN} (Section 5.10.3)			376.39	379.99
5.10.5.2.5	P_{IN} (avg)			376.618	380.17
5.10.5.2.9	Input current at current limit		26-1, 27-2 (26-1 27-4 Rdt)	125.12 mA	132.34
	Input voltage at current limit		27-1 (27-3 Rdt)	34.51 V	34.75
	MUX voltage at current limit		26-3, 27-1	30.13	30.18
	MUX current at current limit		27-12	51.67 mA	55.93
5.10.5.3.1	P_{OUT}			271.01	274.16
5.10.5.3.2	Efficiency		≥ 70%	72.45%	72.64%

SCN 2 3

10.4 Performance test (continued)

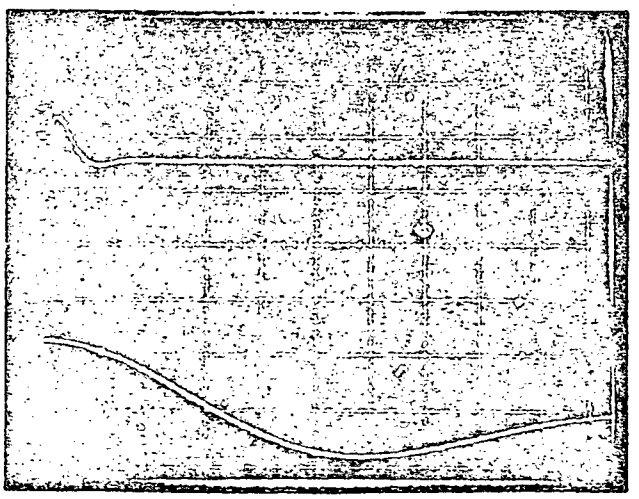
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.6.1	+7V output pulsed	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	7.02	7.16

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-PRIMARY SIDE



(0.2A) CURRENT/DIV: .2A A.C.
(1V) VOLTAGE/DIV: 2V
(200uS) SWEEP RATE: 200 usec

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load on SMA +7V outputs is being removed - PRIMARY SIDE



0.2A) CURRENT/DIV: .2A A.C.
1V) VOLTAGE/DIV: 2V
200uS) SWEEP RATE: 200 usec

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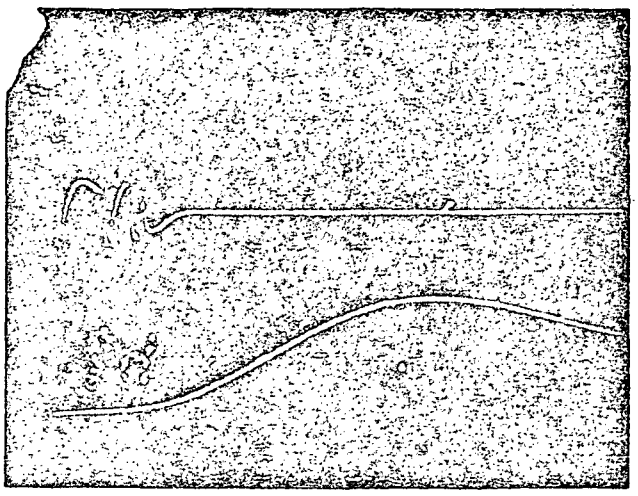
10.4 Performance test (continued)

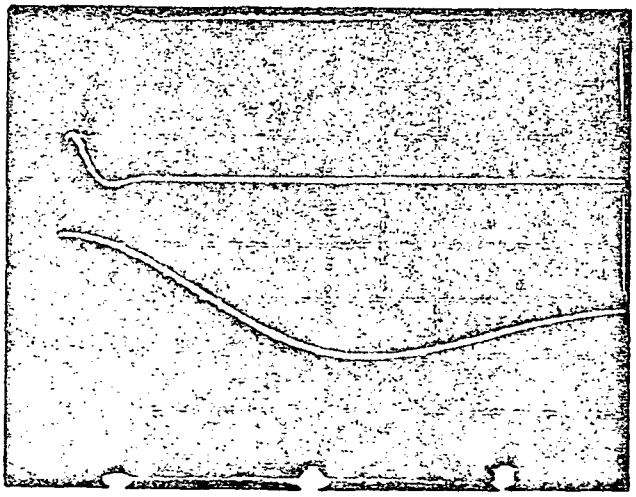
REF. PARA.	DESCRIPTION

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-REDUNDANT SIDE



(0.2A) CURRENT/DIV: .2 A.C.
(1V) VOLTAGE/DIV: 2 V
(200uS) SWEEP RATE: 200 uS

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load is being removed-REDUNDANT SIDE



(0.2A) CURRENT/DIV: .2 A.C.
(1V) VOLTAGE/DIV: 2V
(200uS) SWEEP RATE: 200 uS

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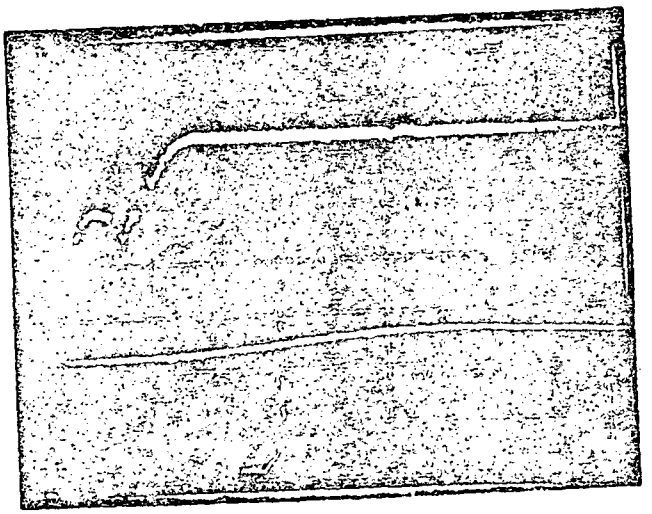
MAC TEST S30

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDAN
5.10.6.3	Input bus current	S26-1, S27-2 (S27-4 for RDT)		112.23	113.4
5.10.6.4	SMA +7V TM- pulsed	S26-5, S28-7 (S28-8 for RDT)		4.608	4.74
5.10.6.5	SMA +7V load current-pulsed	(S26-8, S34-5		.4575V	.4611

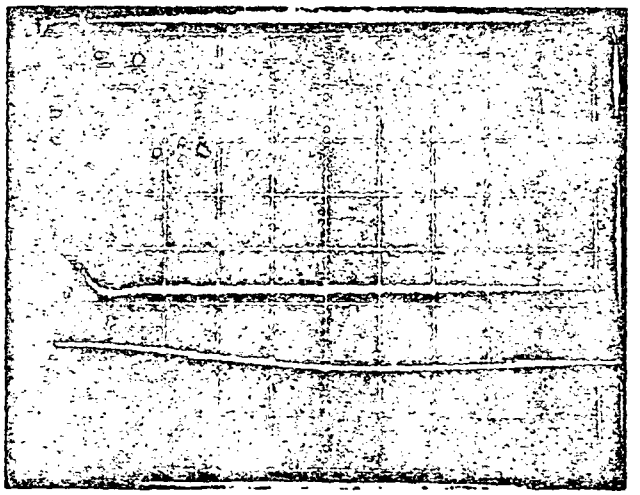
5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as SMA +7V output is being pulse-loaded-PRIMARY SIDE



(1A)* SMA CURRENT/DIV: 100 MA
(MA) BUS CURRENT/DIV: 1A
(200uS) SWEEP RATE: 200 μs

* Using 0.1Ω shunt and 100 mV/Div on scope

5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as pulse-load is being removed-PRIMARY SIDE

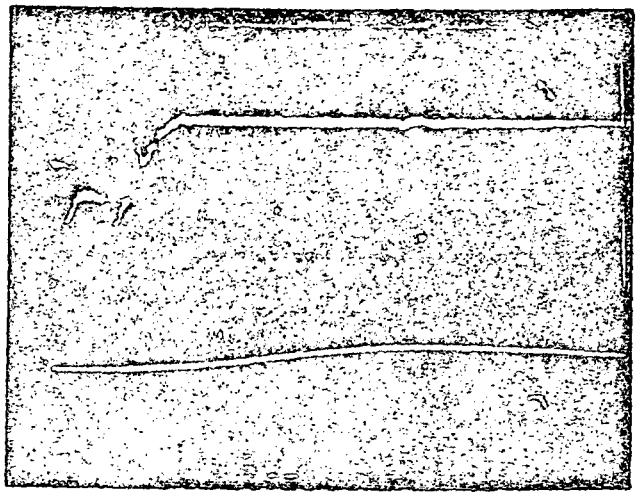


(1A)* SMA CURRENT/DIV: 100 mA
(MA) BUS CURRENT/DIV: 1A
(200uS) SWEEP RATE: 200 μs

*Using 0.1Ω shunt and 100mV/Div on Scope

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION
5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as SMA + 7V output is being pulse loaded - REDUNDANT SIDE

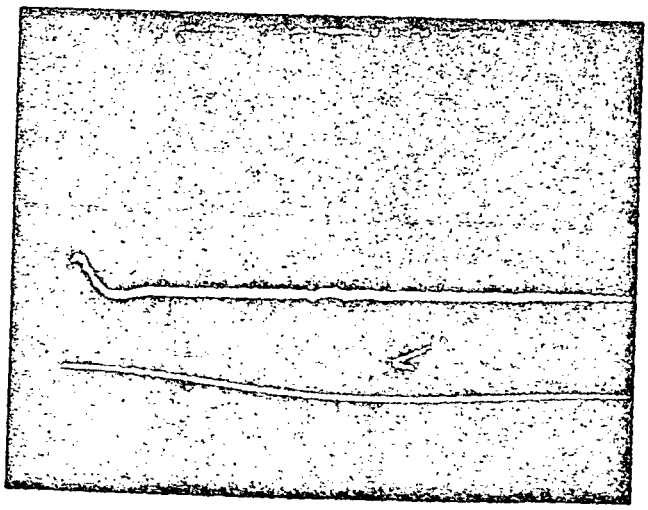


(1A)* SMA CURRENT/DIV: 100mV
(2A) BUS CURRENT/DIV: 1A
(200uS) SWEEP RATE: 200 usec

*Using 0.1Ω shunt and 100 mV/Div on scope.

Sec 2

REF. PARA.	DESCRIPTION
5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as pulse-load is removed - REDUNDANT SIDE



(1A)* SMA CURRENT/DIV: 100mV
(2A) BUS CURRENT/DIV: 1A
(200uS) SWEEP RATE: 200 usec

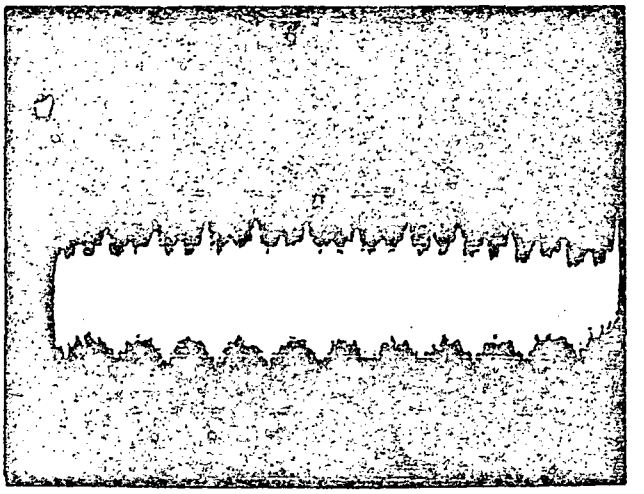
*Using 0.1Ω shunt and 100mV/Div on scope.

Sec 2

10.4 Performance test (continued)

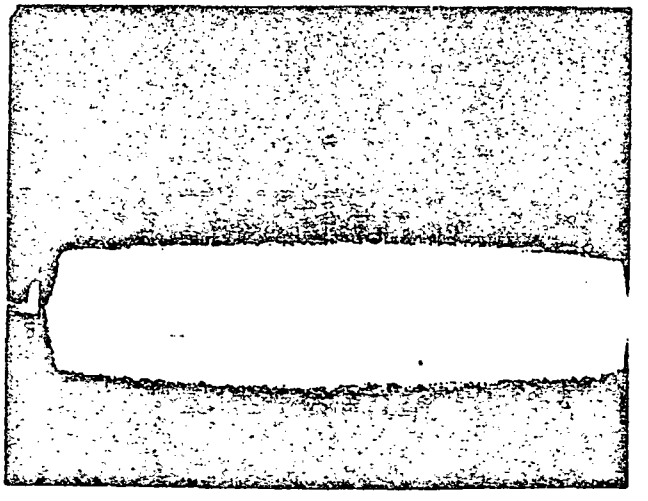
REF. PARA. DESCRIPTION

5.10.7.1 Photograph of reflected input current ripple - PRIMARY SIDE



(1mA) CURRENT/DIV: 2mA A.C.
(10uS) SWEEP RATE: 10 usec

5.10.7.1 Photograph of reflected input current ripple - REDUNDANT SIDE



(1mA) CURRENT/DIV: 2mA A.C.
(10uS) SWEEP RATE: 10 usec

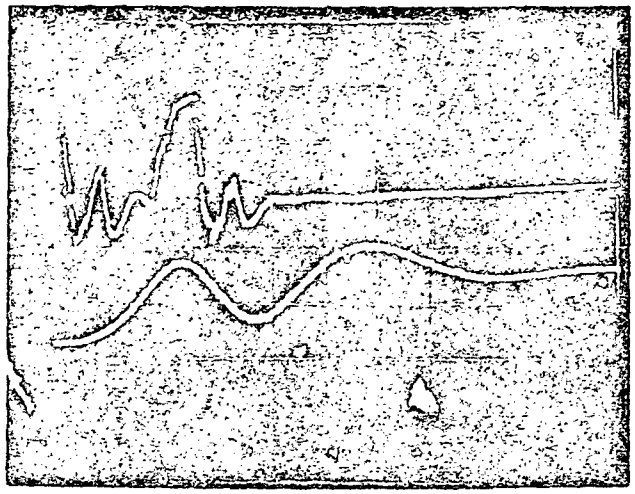
5.10.8.1.1 Input current - full load S26-1, S27-2 (S27-4 for RDT)

(LAC TEST S30) 107.57mV 108.76

5.10.8.1.2 Input current w/o analog load Same

85.69mV 87.64

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is enabled - PRIMARY SIDE

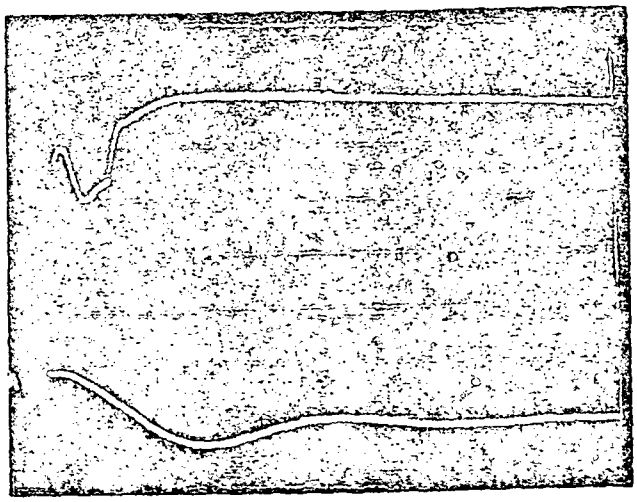


(2V) VOLTAGE/DIV: 2V

(1A) CURRENT/DIV: 1A

(500uS) SWEEP RATE: 500 µsec

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is disabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 2V.

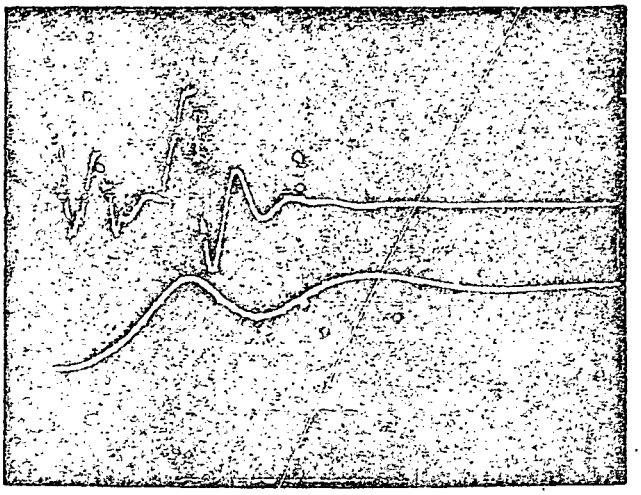
(1A) CURRENT/DIV: 1A

(1mS) SWEEP RATE: 500 µsec

10.4 Performance test (continued)

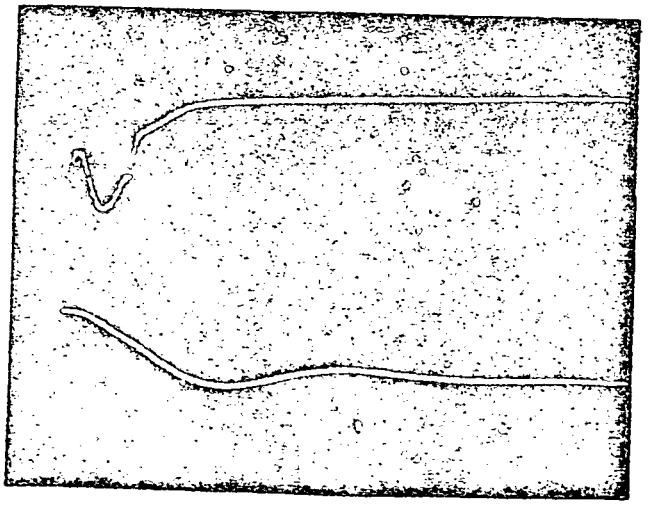
REF. PARA.	DESCRIPTION

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is enabled - REDUNDANT SIDE.



(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(500uS) SWEEP RATE: 500 uSec

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is disabled - REDUNDANT SIDE.

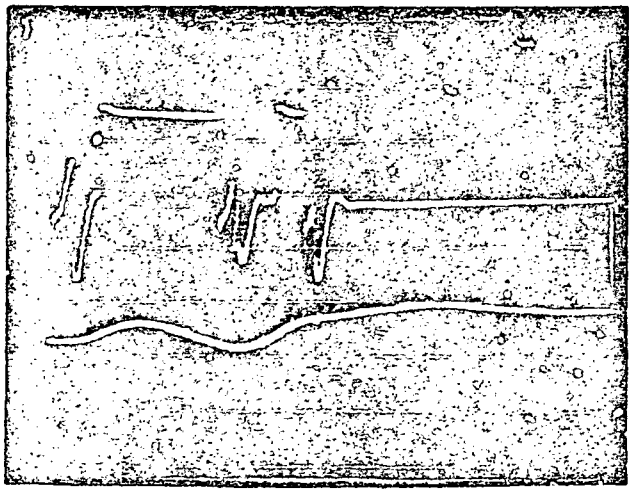


(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(1mS) SWEEP RATE: 500 uSec

10.4 Performance test (continued)

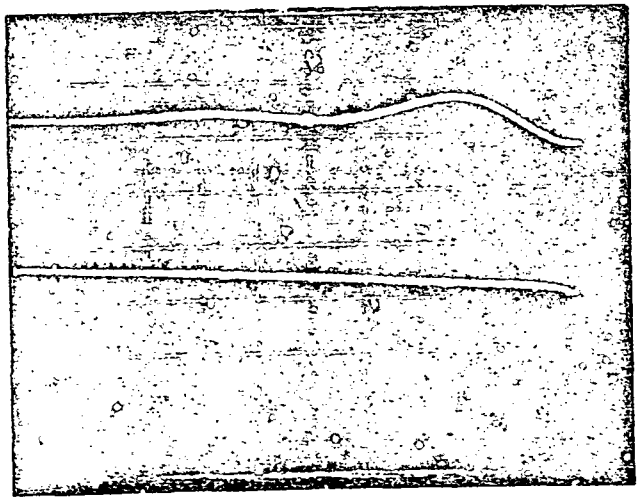
F. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.2.1	Input bus current w/o SMA +7V load	S26-1, S27-2 (S27-4 for RDT)		99.25mA	99.49

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is enabled - PRIMARY SIDE.



(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(200uS) SWEEP RATE: 500uS

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - PRIMARY SIDE.



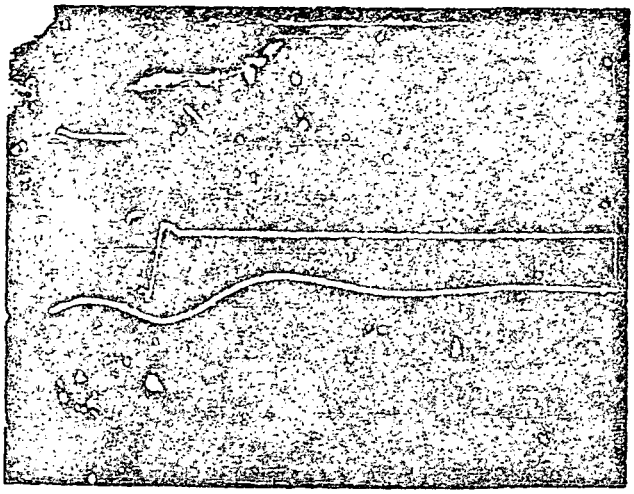
(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(2mS) SWEEP RATE: 500uS

204

10.4 Performance test (continued)

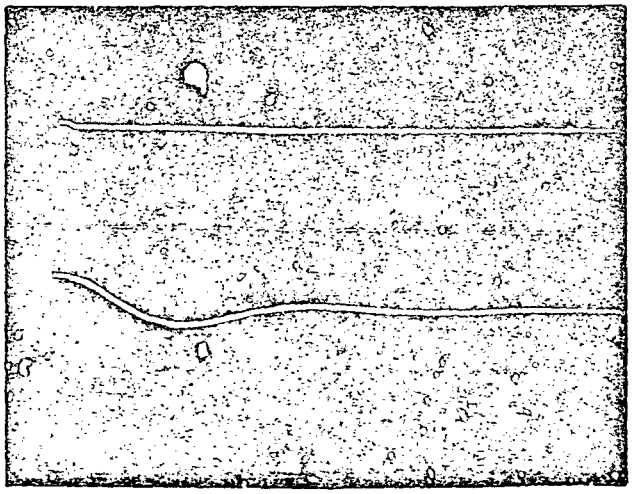
REF. PARA.	DESCRIPTION

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7 output voltage as SMA +7V is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(200uS) SWEEP RATE: 500u

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - REDUNDANT SIDE



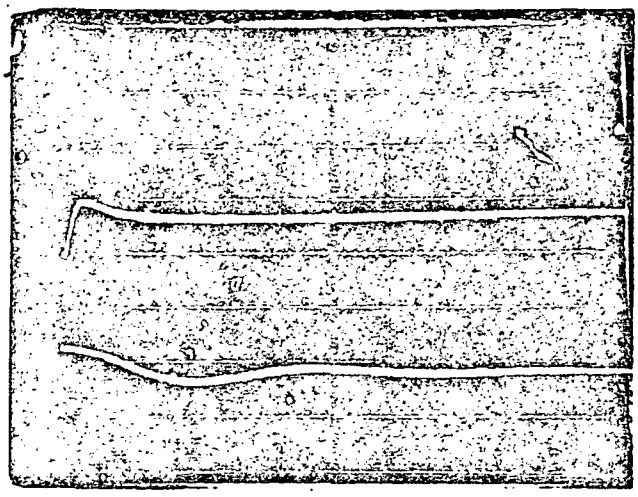
(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(2mS) SWEEP RATE: 500u

205

10.4 Performance test (continued)

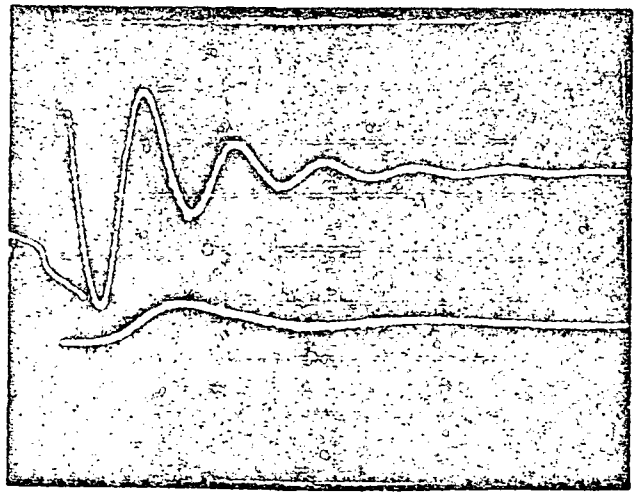
TP. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.2.3	Input bus current w/o SMA ±29V load	S26-1, S27-2 (S27-4 for RDT)		104.44 mV	96.04

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1V
(0.5V) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 500 usec

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA +29V is disabled - PRIMARY SIDE



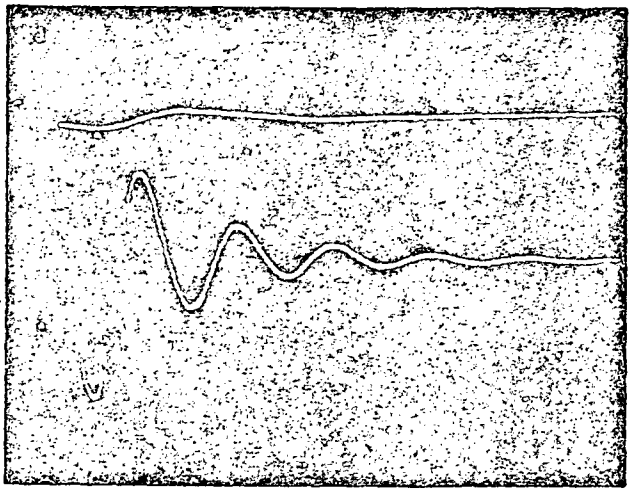
(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 500 mS

206

10.4 Performance test (continued)

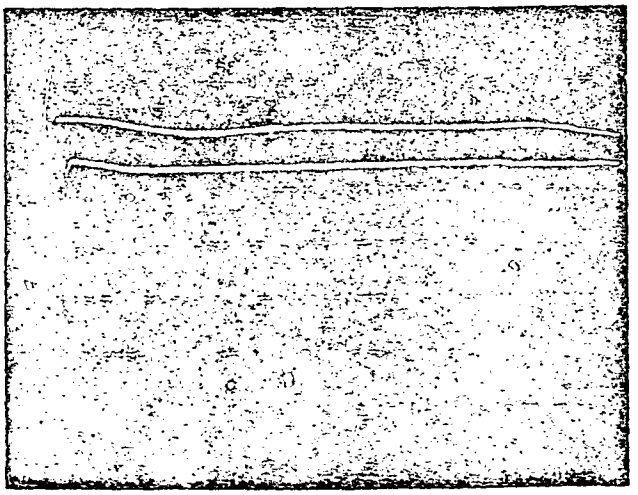
REF. PARA.	DESCRIPTION

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 500 μs

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as ±29V is disabled - REDUNDANT SIDE



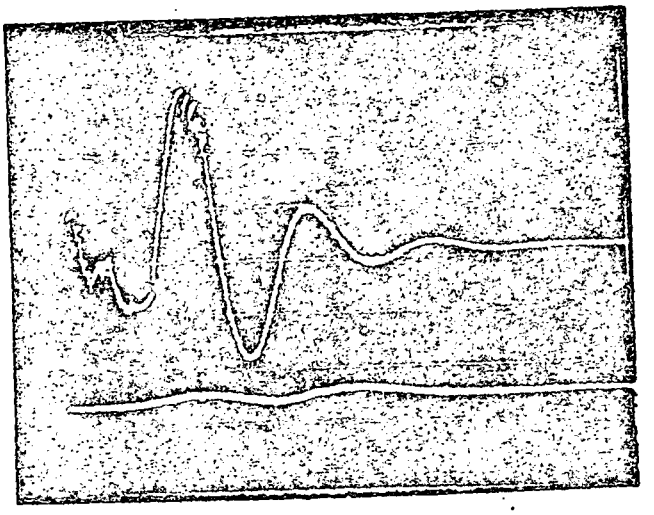
(2V) VOLTAGE/DIV: 1V
(0.5) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 500 μs

10.4 Performance test (continued)

F. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.3.1	Input bus current w/o CDVU load	S26-1, S27-2 (S27-4 for RDT)		105.92	97.52

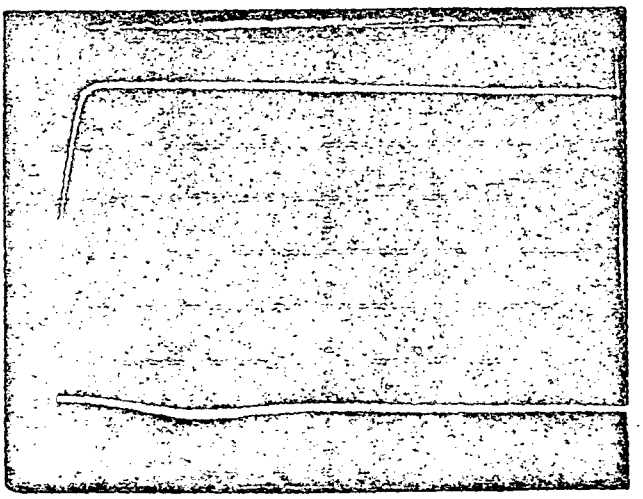
urrent and CDVU output

5.10.8.3.2



:V) VOLTAGE/DIV: 1V
1.5A) CURRENT/DIV: .5A
mS) SWEEP RATE: 500mS

.0.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is disabled - PRIMARY SIDE

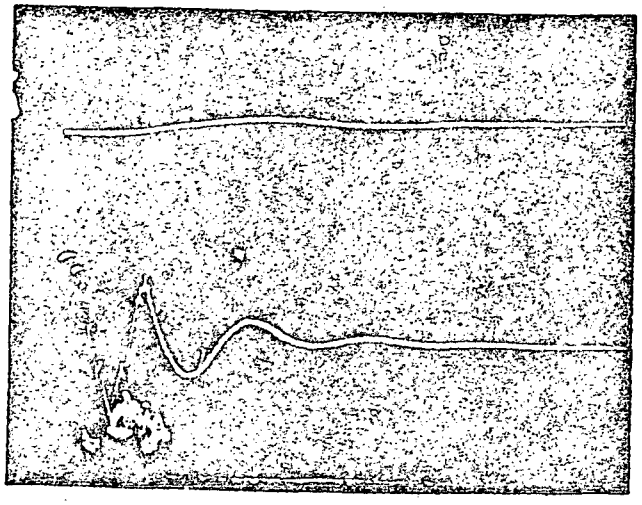


(2V) VOLTAGE/DIV: 1V
(0.5V) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 500mS

10.4 Performance test (continued)

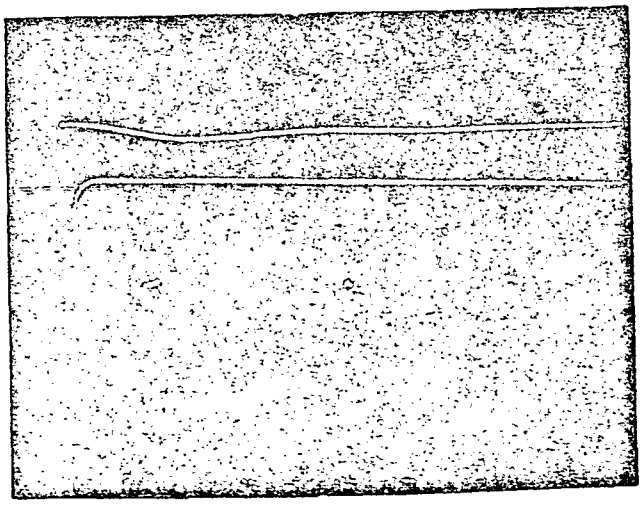
F. PARA. DESCRIPTION

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: .5
(1mS) SWEEP RATE: Sec/cm

5.10.8.3.2 Photograph as transients induced on input bus current and CDVU output voltage as CDVU is disabled - REDUNDANT SIDE

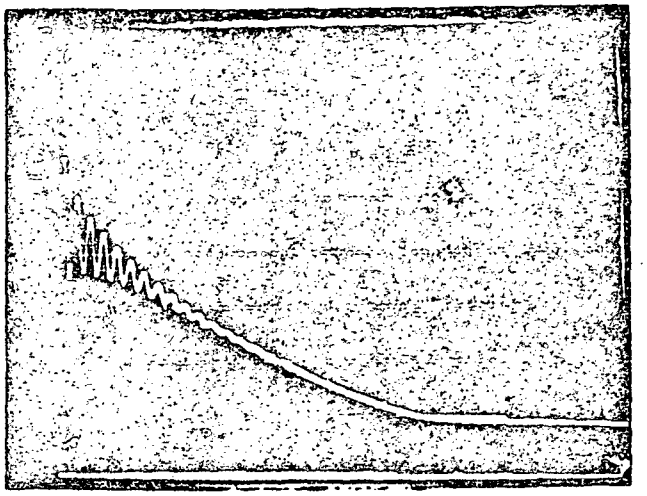


(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: .5
(1mS) SWEEP RATE: Sec/cm

10.4 Performance test (continued)

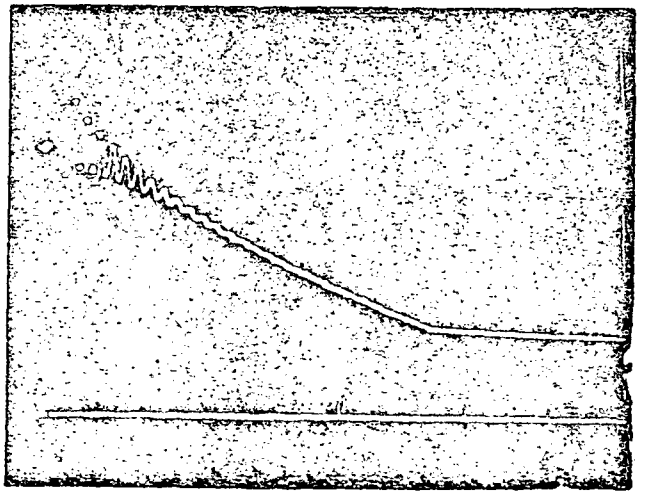
REF. PARA.	DESCRIPTION

5.10.9.1 Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(500uS) SWEEP RATE: 500 usec

Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - REDUNDANT SIDE



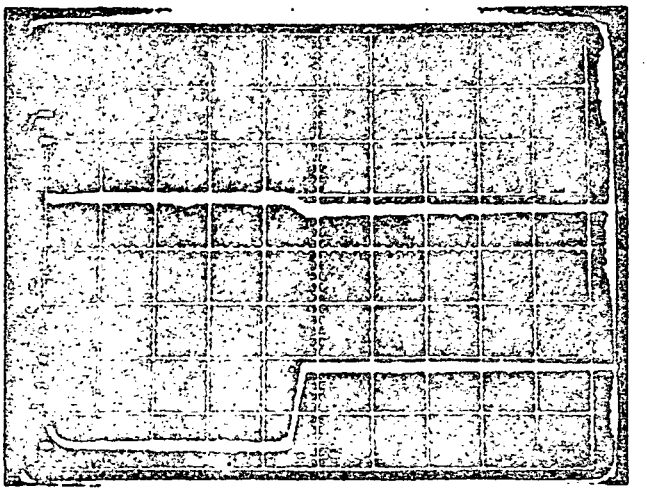
(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(500uS) SWEEP RATE: 500 usec

210

10.4 Performance test (continued)

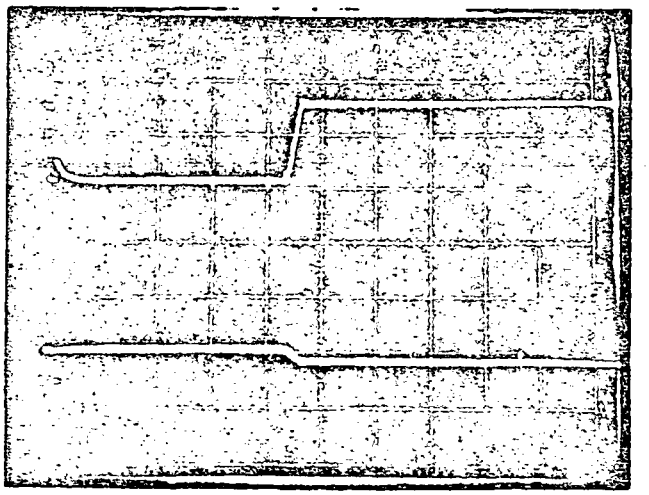
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.9.2	UUT stays off when bus is reapplied.	S1-ON (S2-ON for RDT)	--	✓	✓

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - PRIMARY SIDE



(5W) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(100mS) SWEEP RATE: 10mS

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - REDUNDANT SIDE



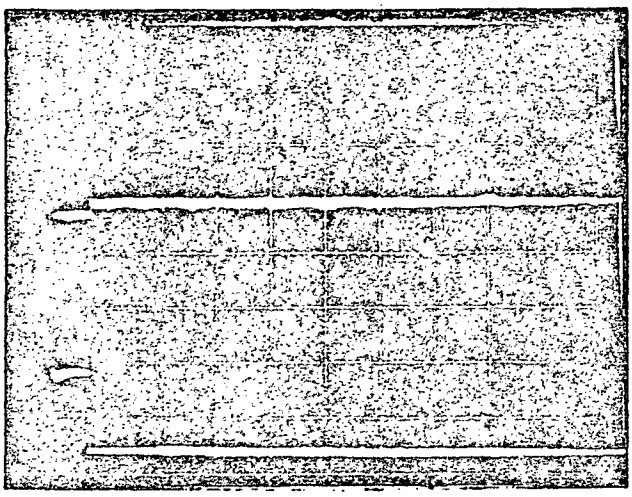
(5W) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(100mS) SWEEP RATE: 10mS

211

10.4 Performance test (continued)

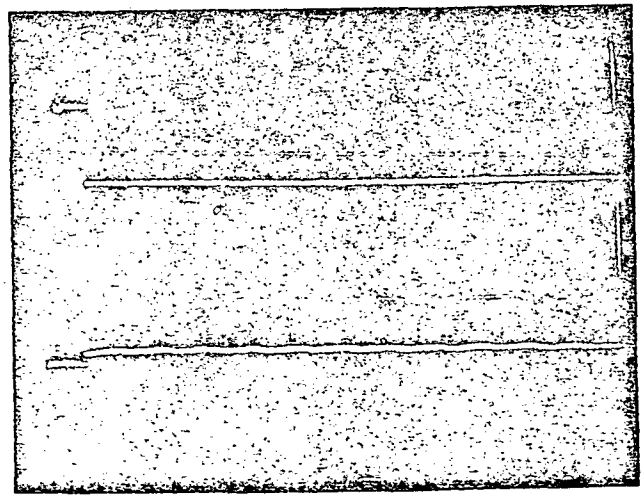
REF. PARA.	DESCRIPTION

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5 V
(5A) CURRENT/DIV: 5 A
(10mS) SWEEP RATE: 10 mS

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5 V
(5A) CURRENT/DIV: 5 A
(10mS) SWEEP RATE: 10 mS

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	PRIMARY	REDUNDANT
5.10.9.5	Record	S27-2 (S27-4)		10.22mV	9.31
5.10.9.6	Record	(S27-4 (S27-2)		2.17mV	21.51mV
	Record	S27-2 (S27-4)			
				106.36mV	76.19
5.10.9.7	Record that UUT turns on.	(Checkmark)		✓	✓
5.10.10.1	Input bus current AFTER it reads ~ 17A AND input bus voltage reads ~ 21V.	S26-1, S27-2 (S27-4 for RDT)		125.24mV	133.29
5.10.10.2	Input bus voltage with 17.0A load	S26-1, S27-1 (S27-3 for RDT)		35.00	35.00
5.10.10.3	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.66	3.825
5.10.10.4	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.54V	3.518
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.03	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		122.66mV	123.39
5.10.10.5	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.06	3.05
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		34.99	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		104.70mV	108.17
5.10.10.6	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.51	2.51
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.00	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		94.25mV	94.24
5.10.10.7	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.01	2.00
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		34.95	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		83.31mV	79.77

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.10.8	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.50	1.50
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.01	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		61.61mV	61.55
5.10.10.9	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.09	1.05
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.02	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		53.68mV	44.54
5.10.10.10	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		.555V	.487
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.00	34.97
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		34.17mV	28.01
5.10.10.11	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		.262V	.218
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.00	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		34.03mV	23.61
5.10.10.12	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		-.264V	-.240
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.00	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		16.53mV	10.79
5.10.11.1	Band 1+ output voltage	S26-1, S27-5		23.70V	24.37
5.10.11.2	Band 1- output voltage	S27-6		-23.54	-23.79
5.10.11.3	2+	S27-7		24.11	23.57
5.10.11.4	2-	S27-8		-24.11	-24.11
5.10.11.5	3+	S27-9		24.21	24.18
5.10.11.6	3-	S27-10		-23.16	-23.02
5.10.11.7	Band 4+ output voltage	S26-1, S27-11		24.33	24.30

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.11.8	Band 4- output voltage	S26-1, S27-12		-23.84	-23.95
5.10.11.9	5,7+	S26-2, S27-1		23.22	23.74
5.10.11.10	5,7-	S27-2		-23.16	-23.56
5.10.11.11	6+	S27-3		22.78	23.37
5.10.11.12	Band 6-	S27-4		-23.41	-23.70
5.10.11.13	SMA Htr +	S27-5		24.54	25.66
5.10.11.14	Htr -	S27-6		-25.57	-25.78
5.10.11.15	+7V	S27-7		9.645	N/A
5.10.11	+7V	(S27-8 For RDT)		N/A	9.747
5.10.11	+29V	S27-9		32.37	N/A
5.10.11	+29V	(S27-11 For RDT)		N/A	32.81
5.10.11	-29V	S27-10		-32.84	N/A
	SMA -29V	S26-2, (S27-12 for RDT)		N/A	-32.60
5.10.11.18	Radiometer	S26-3, S27-2		9.628	10.10
5.10.11.19	CDVU	S27-3		9.520	9.814
5.10.11.20	Analog +	S27-4		27.62	28.02
5.10.11.21	Analog -	S27-5		-26.09	-26.09
5.10.11.22	Electromech.	S27-6		45.06	44.49
5.10.11.23	Outgas	S27-7		105.40	104.02
5.10.11.24	Parasitic	S27-9		31.23	N/A
	Parasitic output voltage	S26-3, (S27-10 for RDT)		N/A	32.01
5.10.11.25	Band 1+ TM output	S26-4, S28-5		4.325	4.451
5.10.11.26	1-	S28-6		4.346	4.325
5.10.11.27	2+	S28-7		4.354	4.284
5.10.11.28	2-	S28-8		4.365	4.365
5.10.11.29	3+	S28-9		4.772	4.401
5.10.11.30	3-	S28-10		4.216	4.339
5.10.11.31	4+	S28-11		4.415	4.412
5.10.11.32	4-	S26-4, S28-12		4.333	4.351
5.10.11.33	Band 5,7+ TM output	S26-5, S28-1		4.236	4.343

SCN-2

SCN-2

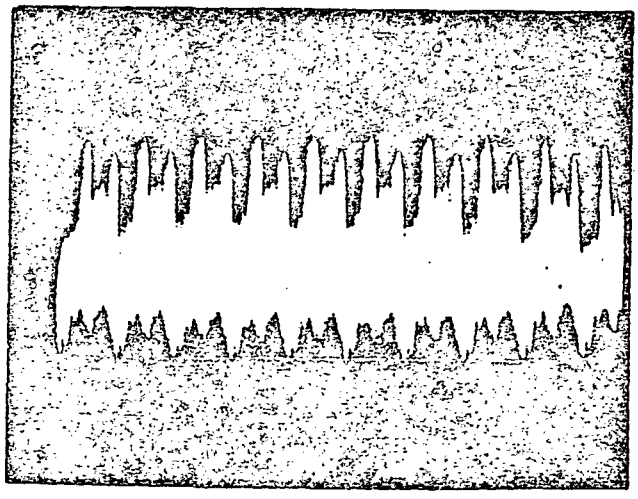
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.11.34	Band 5,7- TM output	S26-5, S28-2		4.219	4.299
5.10.11.35	6+	S28-3		4.118	4.228
5.10.11.36	Band 6-	S28-4		4.273	4.323
5.10.11.37	SMA Htr +	S28-5		4.479	4.687
5.10.11.38	Htr -	S28-6		4.636	4.673
5.10.11.39	+7V	S28-7 (S28-8 for RDT)		5.945	6.005
5.10.11.40	+29V	S28-9 (S28-11 for RDT)		4.414	4.497
5.10.11.41	SMA -29V	S26-5, S28-10 (S28-12 for RDT)		3.840	3.847
5.10.11.42	Radiometer	S26-6, S28-2		5.327	5.475
5.10.11.43	CDVU	S28-3		5.442	5.435
5.10.11.44	Analog +	S28-4		4.909	4.951
5.10.11.45	Analog -	S28-5		4.563	4.364
5.10.11.46	Electromech.	S28-6		5.516	5.445
5.10.11.47	Outgas - TM output	S26-6, S28-7		5.248	5.178
5.10.12.1	Bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.00	35.00
5.10.12.2	Input bus current	S26-1, S27-2 (S27-4 for RDT)		35.94	36.26
5.10.12.3	SMA Htr + output voltage	S26-2, S27-5		21.55	21.93
5.10.12.4	Htr + ripple	Seen on Scope	<630 mV pk-pk	40	40
5.10.12.5	Htr - voltage	S26-2, S27-6		-22.20	-22.61
5.10.12.6	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	40	40
5.10.12.7	CDVU voltage	S26-3, S27-3		7.593	7.751
5.10.12.8	CDVU ripple	Seen on Scope	<240 mV pk-pk	40	40
5.10.12.9	Outgas - output voltage	S26-3, S27-7		87.05	97.14
5.10.12.10	Outgas - output ripple	Seen on Scope	2.50V pk-pk	300mv	356
5.10.12.11	Parasitic output voltage	S26-3, S27-9 (S27-10 for RDT)		30.26	30.59
5.10.12.12	Parasitic output ripple	Seen on Scope	<900 mV pk-pk	100	156

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.13.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		.577V	.568V
5.10.13.2	SMA Htr + output	S26-5, S28-5		3.940	4.021
5.10.13.3	SMA Htr -	S26-5, S28-6		4.025	4.100
5.10.13.4	CDVU	S26-6, S28-3		4.270	4.355
5.10.13.5	Outgas output telemetry	S26-6, S28-7		4.346	4.378

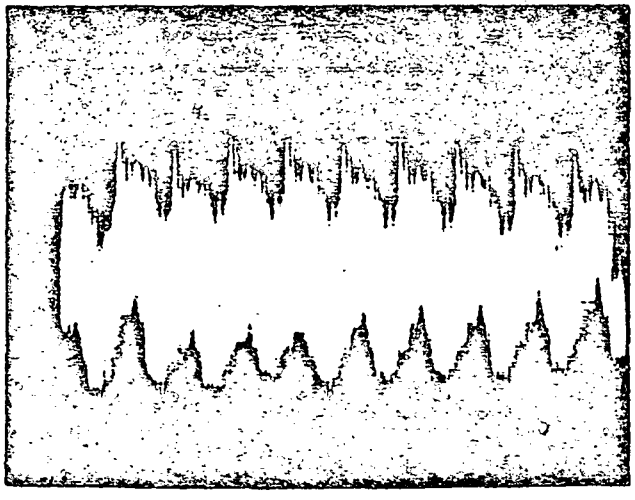
5.10.14.1 Photograph of reflected input current ripple in outgas mode — PRIMARY SIDE



(2mA) CURRENT/DIV: 2mA A.C.

(10uS) SWEEP RATE: 10 μsec

5.10.14.1 Photograph of reflected input current ripple in outgas mode — REDUNDANT SIDE



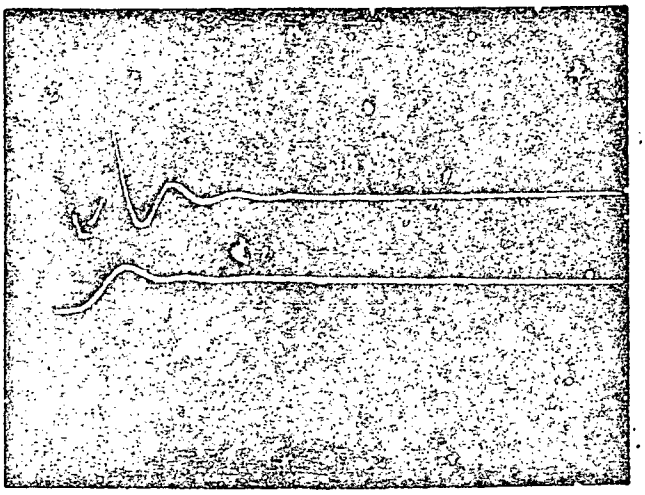
(2mA) CURRENT/DIV: 2mA A.C.

(10uS) SWEEP RATE: 10 μsec

10.4 Performance test (continued)

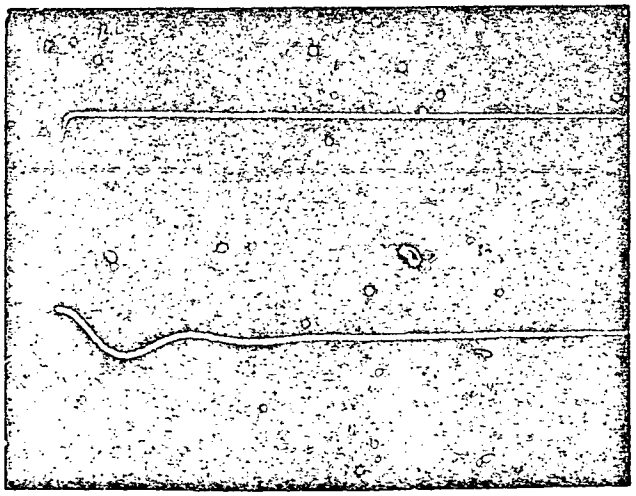
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.1.1	Input current with CDVU off.	S26-1, S27-2 (S27-4 for RDT)		34.77mv	34.43

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V
(200mA) CURRENT/DIV: 200mA
(1mS) SWEEP RATE: 1mS

5. Photograph of input bus current and CDVU output voltage as CDVU load is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V
(200mA) CURRENT/DIV: 200mA
(2mS) SWEEP RATE: 1mS

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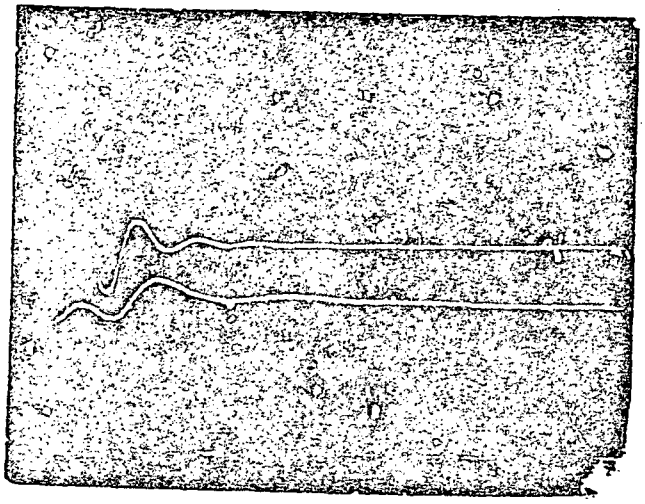
10.4 Performance test (continued)

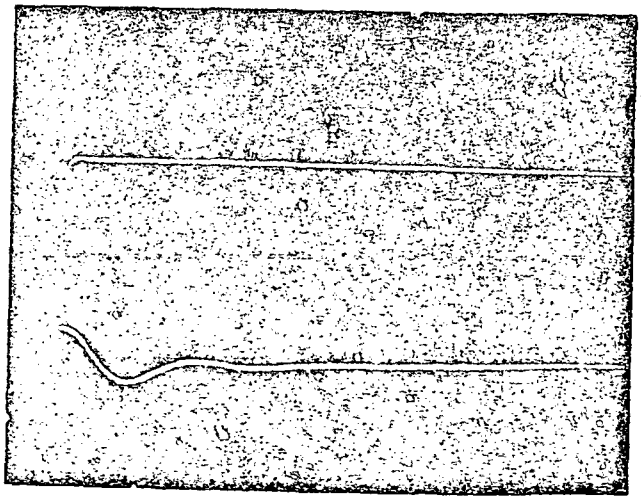
PARA.	DESCRIPTION

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled — REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2V
(200mA) CURRENT/DIV: 200mA
(1mS) SWEEP RATE: 1mS

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled — REDUNDANT SIDE

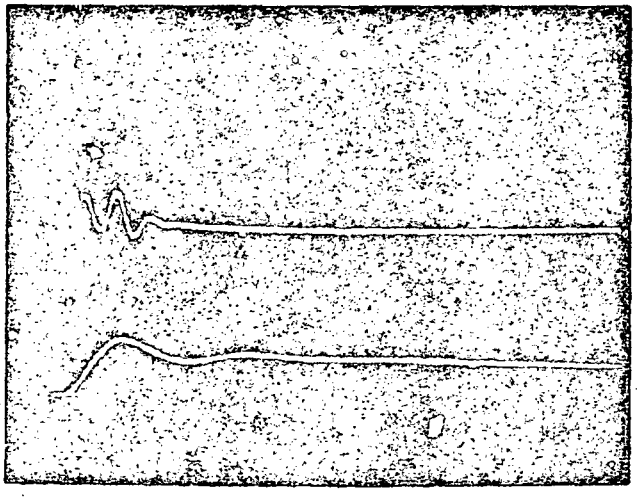


(2V) VOLTAGE/DIV: 2V
(200mA) CURRENT/DIV: 200mA
(2mS) SWEEP RATE: 1mS

10.4 Performance test (continued)

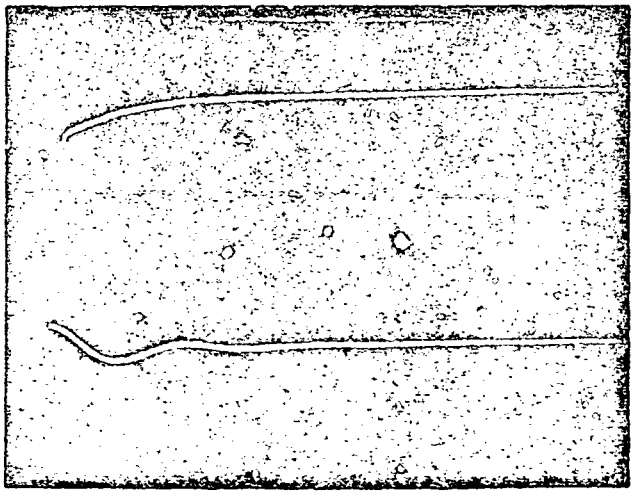
F. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.2.1	Input bus current with outgas disabled	S26-1, S27-2 (S27-4 for RDT)		12.975 mA	3636

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(2mS) SWEEP RATE: 2mS

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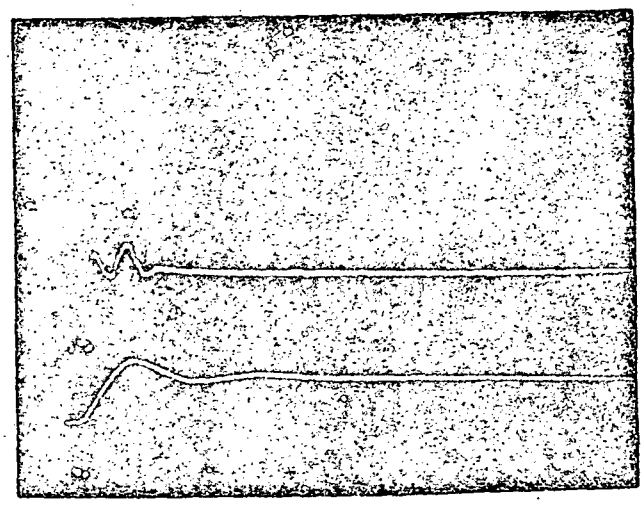
10.4 Performance test (continued)

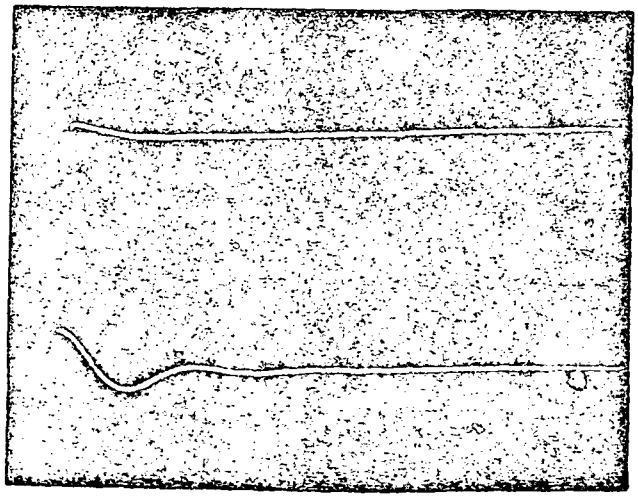
REF. PARA.	DESCRIPTION

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(500uS) SWEEP RATE: 1ms

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITION	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.16.1	BPS voltage	S26-1, S27-1 (S27-3 for RDT)		35.05 (49)	35.00
5.10.16.2	BPS current	S26-1, S27-2 (S27-4 for RDT)		15.37 mV (50)	15.53
5.10.16.3	SMA Htr +output voltage	S26-2, S27-5		21.97 (13)	22.31
5.10.16.4	SMA Htr +load current	S26-8, S34-1		47.16 mV (38)	45.69
5.10.16.5	SMA Htr -output voltage	S26-2, S27-6		-22.29 (14)	-22.75
5.10.16.6	SMA Htr -load current	S26-8, S34-2		-9.79 mV (39)	-9.98
5.10.16.7	CDVU output voltage	S26-3, S27-3		7.59 (20)	7.74
5.10.16.8	CDVU load current	S26-8, S34-10		270 V (45)	276
5.10.16.9	Parasitic output voltage	S26-3, S27-9 (S27-10)		30.96 (23)	31.52
5.10.16.10	Parasitic load current	S26-8, S34-7		143.77 mV (40)	146.96
5.10.16.11	Input power (5.10.16.1 x 5.10.16.2)			53.872	55.405
5.10.16.12	Output power ((5.10.16.3 x 5.10.16.4) + (5.10.16.5 x 5.10.16.6) + (5.10.15.7 x 5.10.16.8) + (5.10.16.9 x 5.10.16.10)	(Primary) DNA DNA DNA DNA	(Redundant) DNA DNA DNA DNA	17.395	18.137 SCN 2
5.10.16.13	Efficiency ((5.10.16.12) ÷ (5.10.16.11)) x 100%			32.3%	32.7%

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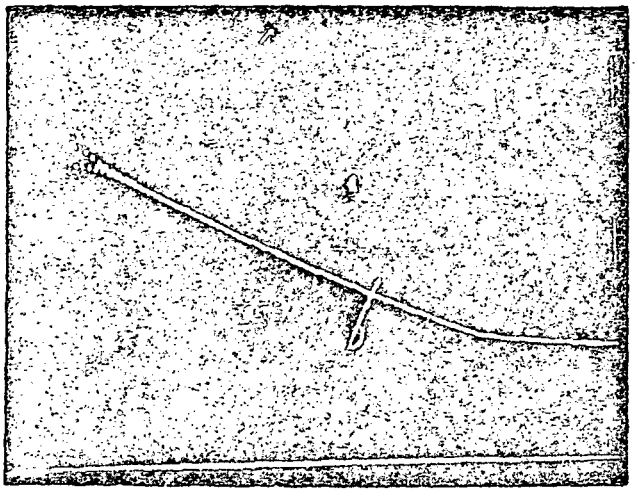
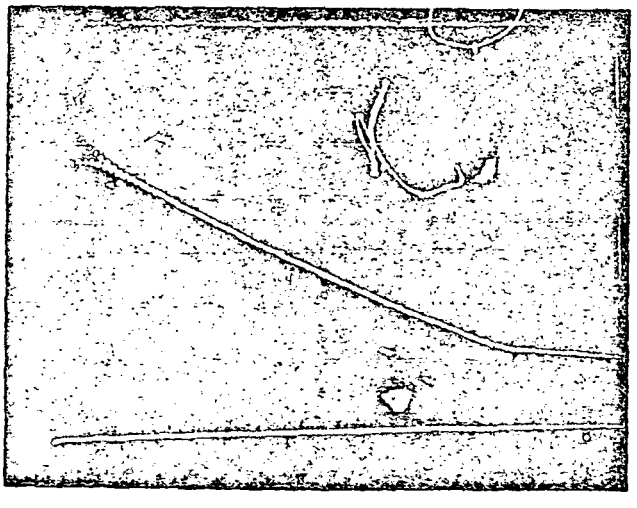
10.4 Performance test (continued)

5.10.17.1 Photograph of input bus current and input bus voltage as is disable - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

5.10.17.1 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

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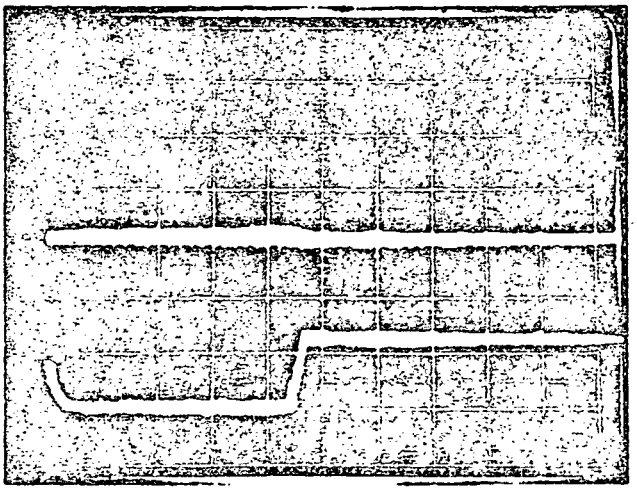
10.4 Performance test (continued)

5.10.17.2 Unit stays off (check)

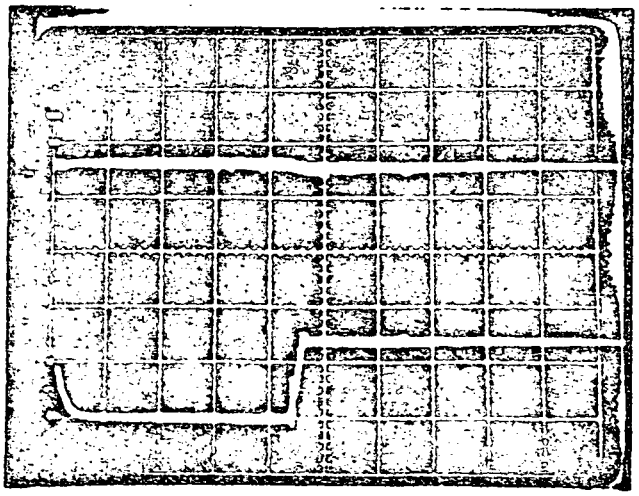
✓ Primary ✓ Redundant

5.10.17.3 Photograph of input bus current and input bus voltage as is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(100mS) SWEEP RATE: 100mS

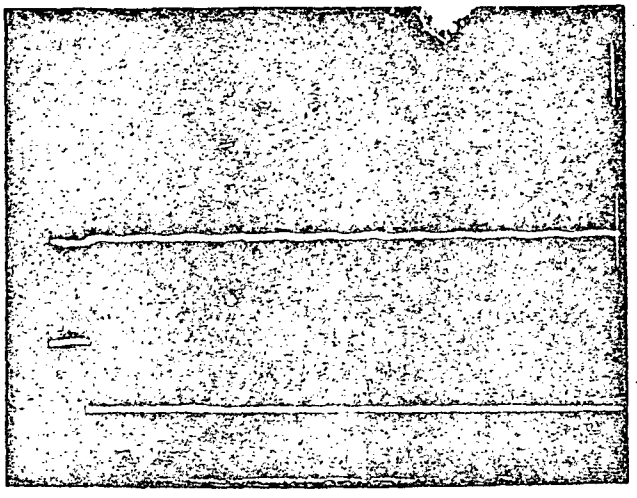
5.10.17.3 Photograph of input bus current and input bus voltage as as is enabled - REDUNDANT SIDE



VOLTAGE/DIV: 5V
CURRENT/DIV: 2A
S) SWEEP RATE: 100mS

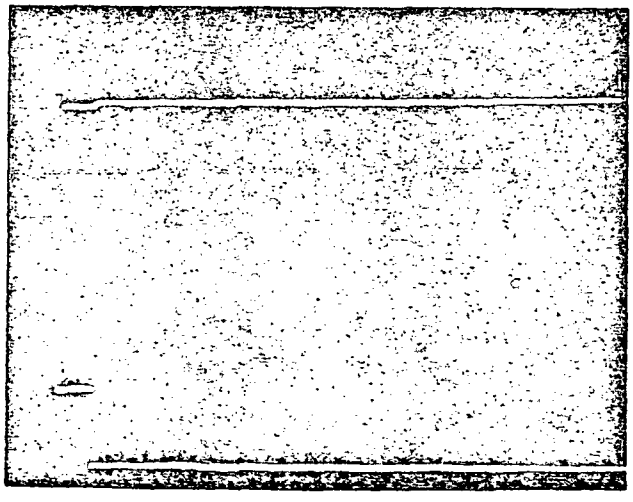
10.4 Performance test (continued)

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 10mS

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE

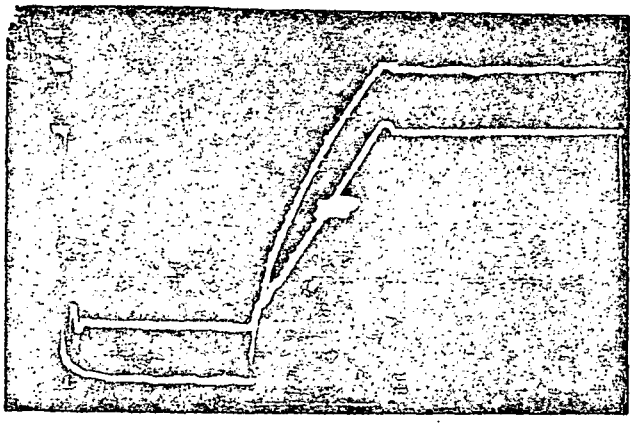


(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 10mSec

10.4 Performance test (continued)

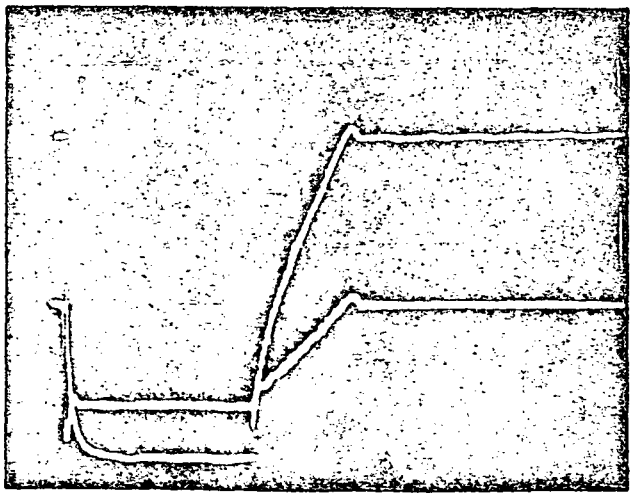
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.17.5	Record that UUT operates correctly.		(checkmark)	✓	✓

5.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 2A
(20mS) SWEEP RATE: 10mS

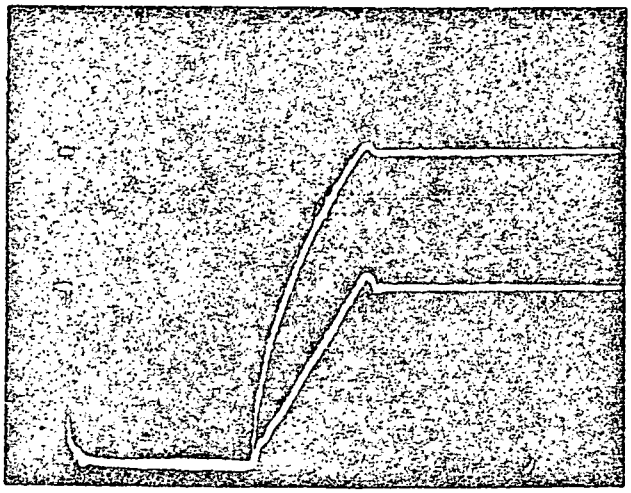
5.10.18.2 Photograph of input bus current and parasitic output voltage as parasitic enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 2A
(20mS) SWEEP RATE: 10mS

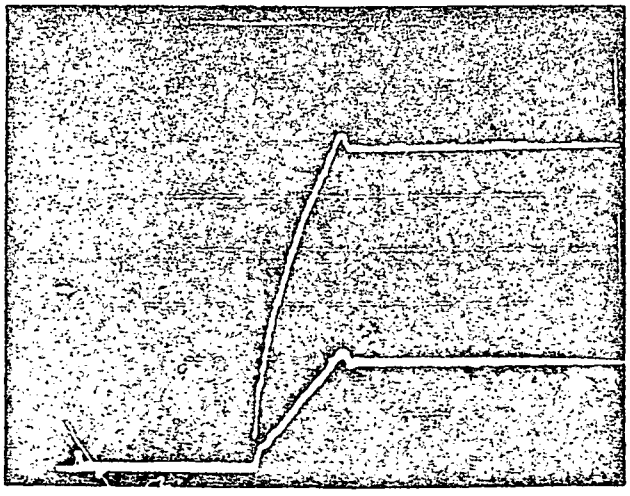
10.4 Performance test (continued)

10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 2A.
(20mS) SWEEP RATE: 10mSec

10.18.2 Photograph of input bus current and MUX output voltage as parasitic enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5v) Volts/Div: 5V
(5A) Current/Div: 2A
(20mS) Sweep Rate: 10mSec.

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.18.4	Undervoltage Trip Point (ON/OFF)	S26-1, S27-1 (S27-3 for RDT)	18.0 ±1.50V	19.11	18.06
5.10.18.5	UUT stays OFF			✓	✓
5.10.18.6	Undervoltage Trip Point (OFF/ON)	S26-1, S27-1 (S27-3 for RDT)	19.0 ±1.50V	18.90	18.895
5.10.18.7	Overvoltage Trip Point	S26-1, S27-1 (S27-3 for RDT)	38.0 ± 2V	35.25	36.81 SCN 2
5.10.18.8	UUT stays OFF			✓	✓
5.10.18.9	UUT turns ON			✓	✓

2/4/82
DATE

ELLIS / BOLISAW
TESTER(S)

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10.4 Performance test - Long Form

PROTOFLIGHT N/A, OR FLIGHT ✓, S/N 004 TEMPERATURE: Ambient
IN-PROCESS N/A., QUAL N/A., OR ACCEPTANCE ✓
TESTING PHASE FINAL AMBIENT LINE VOLTAGE: 23.0 VOLTS

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.1.1	Calibrate cmd gen	--	--	✓ 6.32V 0.32mA	✓
5.10.2.1	Input bus current	S26-1, S27-2 (S27-4 for redundant)		0.226mA	0.228mA
5.10.2.2	MUX output voltage	S26-3, S27-1	30.0 ±0.90V	29.94V	30.27V
5.10.2.3	MUX load current	S26-3, S27-12	3.55 ±0.40A	32.24mA	32.64mA

The rest of Section 5.10.2 requires only checking voltage - indicate by checkmarks.

5.10.2.4.1	B1 + output voltage	S26-1, S27-5	✓	✓
5.10.2.4.2	B1 -	S27-6	✓	✓
5.10.2.4.3	B1 -	S27-5	✓	✓
5.10.2.4.4	B1 +	S27-7	✓	✓
5.10.2.5.1	B2 +	S27-7	✓	✓
5.10.2.5.2	B2 -	S27-8	✓	✓
5.10.2.5.3	B2 -	S27-8	✓	✓
5.10.2.5.4	B2 +	S27-7	✓	✓
5.10.2.6.1	B3 +	S27-9	✓	✓
5.10.2.6.2	B3 -	S27-10	✓	✓
5.10.2.6.3	B3 -	S27-10	✓	✓
5.10.2.6.4	B3 +	S27-9	✓	✓
5.10.2.7.1	B4 +	S27-11	✓	✓
5.10.2.7.2	B4 -	S27-12	✓	✓
5.10.2.7.3	B4 -	S27-12	✓	✓
5.10.2.7.4	B4 +	S26-1, S27-11	✓	✓
5.10.2.8.1	B5,7+	S26-2, S27-1	✓	✓
5.10.2.8.2	B5,7-	S27-2	✓	✓
5.10.2.8.3	B5,7-	S27-2	✓	✓
5.10.2.8.4	B5,7+	S27-1	✓	✓
5.10.2.9.1	B6 +	S27-3	✓	✓
5.10.2.9.2	B6 - output voltage	S26-2, S27-4	✓	✓

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10.4 Performance test (continued)

PFT PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.2.9.3	B6 - output voltage	S26-2, S27-4		✓	✓
5.10.2.9.4	B6 + output voltage	S26-2, S27-3		✓	✓
5.10.2.10.1	SMA EIR + output voltage	S27-5		✓	✓
5.10.2.10.2	-	S27-6		✓	✓
5.10.2.10.3	-	S27-6		✓	✓
5.10.2.10.4	+	S27-5		✓	✓
5.10.2.11.1	-7V	S26-2, S27-7		✓	
5.10.2.11.2	-7V	(S27-8 for RDT)			✓
5.10.2.12.1	-29V	S26-2, S27-9		✓	
		(S27-11 for RDT)			✓
5.10.2.12.2	-29V	S26-2, S27-10		✓	
		(S27-12 for RDT)			✓
5.10.2.12.3	-29V	S26-2, S27-10		✓	✓
5.10.2.12.4	SMA EIR -29V	S26-2, S27-9		✓	✓
5.10.2.13.1	Radiometer	S26-3, S27-2		✓	✓
5.10.2.13.2	Radiometer	S27-2		✓	✓
5.10.2.14.1	CDVT	S27-3		✓	✓
5.10.2.14.2	CDVU	S27-3		✓	✓
5.10.2.15.1	Analog +	S27-4		✓	✓
5.10.2.15.2	Analog -	S27-5		✓	✓
5.10.2.15.3	Analog -	S27-5		✓	✓
5.10.2.15.4	Analog +	S27-4		✓	✓
5.10.2.16.1	Electromech.	S27-6		✓	✓
5.10.2.16.2	Electromech.	S27-6		✓	✓
5.10.2.17.1	Outgas output voltage	S26-3, S27-7		✓	✓
5.10.3.1	Bus voltage	S26-1, S27-1			
		(S27-3 for RDT)		23.06 V (49)	23.05
5.10.3.2	MUX load current	S26-3, S27-12	4.130 ±0.025A	41.46 mV	41.44
5.10.3.3	Bus current	S26-1, S27-2			
		(S27-4 for RDT)		156.27 mV (50)	158.84
5.10.3.3.2	BPS Voltage	S26-1, S27-1 S27-3)		23.06 V	23.04 V
5.10.3.3.3	BPS Current	S26-1, S27-2 (S27-4)		157.53 mV	158.84 mV
5.10.3.3.4	MUX Current	S26-3, S27-12		41.35 mV	41.50

SCN-1

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY		REDUNDANT
5.10.3.4.1	B1 + output voltage	S26-1, S27-5	20.50 ±2.50V	20.46	(1)	20.60
5.10.3.4.2	B1 + output ripple	Look on Scope	<600 mV pk-pk	30		40
5.10.3.4.3	B1 - output voltage	S26-1, S27-6	-20.50 ±2.50V	-20.48	(2)	-20.62
5.10.3.4.4	B1 - output ripple	Look on Scope	<600 mV pk-pk	30		30
5.10.3.5.1	B2 + output voltage	S26-1, S27-7	20.50 ±2.50V	20.31	(3)	20.46
5.10.3.5.2	B2 + output ripple	Look on Scope	<600 mV pk-pk	30		40
5.10.3.5.3	B2 - output voltage	S26-1, S27-8	-20.50 ±2.50V	-20.34	(4)	-20.49
5.10.3.5.4	B2 - output ripple	Seen on Scope	<600 mV pk-pk	30		40
5.10.3.6.1	B3 + output voltage	S26-1, S27-9	20.50 ±2.50V	20.41	(5)	20.42
5.10.3.6.2	B3 + output ripple	Seen on Scope	<600 mV pk-pk	30		40
5.10.3.6.3	B3 - output voltage	S26-1, S27-10	-20.50 ±2.50V	-20.36	(6)	-20.50
5.10.3.6.4	B3 - output ripple	Seen on Scope	<600 mV pk-pk	30		2
5.10.3.7.1	B4 + output voltage	S26-1, S27-11	20.50 ±2.50V	20.43	(7)	20.60
5.10.3.7.2	B4 + output ripple	Seen on Scope	<600 mV pk-pk	30		30
.10.3.7.3	B4 - output voltage	S26-1, S27-12	-20.50 ±2.50V	-20.46	(8)	-20.62
5.10.3.7.4	B4 - output ripple	Seen on Scope	<600 mV pk-pk	30		30
5.10.3.8.1	B5,7 + voltage	S26-2, S27-1	20.50 ±2.50V	20.20	(9)	20.16
5.10.3.8.2	B5,7 + ripple	Seen on Scope	<600 mV pk-pk	30		50
5.10.3.8.3	B5,7 - voltage	S26-3, S27-2	-20.50 ±2.50V	-20.19	(10)	-20.19
5.10.3.8.4	B5,7 - ripple	Seen on Scope	<600 mV pk-pk	40		50
5.10.3.9.1	B6 + voltage	S26-2, S27-3	20.50 ±2.50V	20.37	(11)	20.51
5.10.3.9.2	B6 + ripple	Seen on Scope	<600 mV pk-pk	30		50
5.10.3.9.3	B6 - voltage	S26-2, S27-4	-20.50 ±2.50V	-20.37	(12)	-20.54
5.10.3.9.4	B6 - ripple	Seen on Scope	<600 mV pk-pk	30		30
5.10.3.10.1	SMA Htr + voltage	S26-2, S27-5	21.20 ±2.12V	22.21	(13)	22.42
5.10.3.10.2	SMA Htr + ripple	Seen on Scope	<630 mV pk-pk	30		30
5.10.3.10.3	SMA Htr - voltage	S26-2, S27-6	-21.20 ±2.12V	-22.65	(14)	-22.87
5.10.3.10.4	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	30		30
5.10.3.11.1	SMA +7V voltage	S26-2, S27-7 (S27-8 for RL~)	7.10 ±0.80V	7.656	(15)	7.759
5.10.3.11.2	SMA +7V output ripple	Seen on Scope	<210 mV pk-pk	20		30

10.4 Performance Test (continued)

REF. PARA.	DESCRIPTION	DPM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.3.12.1	SMA +29V output voltage	S26-2, S27-9 (S27-11 for RDT)	29.50 ±1.50V	30.36 (16)	30.58
5.10.3.12.2	SMA +29V ripple	Seen on Scope	<870 mV, pk-pk	50	50
5.10.3.12.3	SMA -29V voltage	S26-2, S27-10 (S27-12 for RDT)	-29.50 ±1.50V	-30.34 (17)	-30.60
5.10.3.12.4	SMA -29V ripple	Seen on Scope	<870 mV pk-pk	50	40
5.10.3.13.1	MUX voltage	S26-3, S27-1	30.00 ±0.90V	30.09 (18)	30.28
5.10.3.13.2	MUX ripple	Seen on Scope	<900 mV, pk-pk	50	60
5.10.3.14.1	Radiometer voltage	S26-3, S27-2	8.50 ±0.85V	8.544 (19)	8.552
5.10.3.14.2	Radiometer ripple	Seen on Scope	<250 mV pk-pk	30	30
5.10.3.15.1	CDVU voltage	S26-3, S27-3	8.00 ±0.80V	7.600 (20)	7.709
5.10.3.15.2	CDVU ripple	Seen on Scope	<240 mV pk-pk	30	30
5.10.3.16.1	Analog + voltage	S26-3, S27-4	21.20 ±2.12V	22.40 (21)	22.52
5.10.3.16.2	Analog + ripple	Seen on Scope	<630 mV pk-pk	30	30
5.10.3.16.3	Analog - voltage	S26-3, S27-5	-21.20 ±2.12V	-22.46 (22)	-22.57
5.10.3.16.4	Analog - ripple	Seen on Scope	<630 mV pk-pk	40	30
5.10.3.17.1	Electromech. voltage	S26-3, S27-6	33.40 ±3.34V	32.99 (23)	33.28
5.10.3.17.2	Electromech. ripple	Seen on Scope	<1.0V pk-pk	30	40
5.10.3.18.1	Outgas voltage	S26-3, S27-7	100.0 ±12.0V	102.39	102.04
5.10.3.18.2	Outgas output ripple	Seen on Scope	<3.0V pk-pk	90	102
5.10.4.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		4.787	4.748
5.10.4.2.1	Band 1 + volt. telemetry	S26-4, S28-5		3.737	3.768
5.10.4.2.2	Band 1 -	S28-6		3.728	3.754
5.10.4.3.1	Band 2+	S28-7		3.697	3.732
5.10.4.3.2	Band 2-	S28-8		3.688	3.712
5.10.4.4.1	Band 3+	S28-9		3.714	3.719
5.10.4.4.2	Band 3-	S28-10		3.715	3.739
5.10.4.5.1	Band 4+	S28-11		3.741	3.746
5.10.4.5.2	Band 4-	S26-4, S28-12		3.723	3.751
5.10.4.6.1	Band 5,7+	S26-5, S28-1		3.694	3.689
5.10.4.6.2	Band 5,7- volt. telemetry	S26-5, S28-2		3.680	3.678

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.4.7.1	Band 6 + volt. telemtry	S26-5, S28-3		3.685	3.719
5.10.4.7.2	Band 6 -	S28-4		3.720	3.750
5.10.4.8.1	SMA Htr +	S28-5		4.057	4.133
5.10.4.8.2	SMA Htr -	S28-6		4.107	4.145
5.10.4.9	SMA +7V	S26-5, S27-7 (S27-8 for RDT)		4.881	4.965
5.10.4.10.1	SMA +29V	S26-5, S28-9 (S27-11 for RDT)		4.165	4.221
5.10.4.10.2	SMA -29V	S26-5, S28-10 (S27-12 for RDT)		3.955	3.998
5.10.4.11	MUX	S26-6, S28-1		4.269	4.299
5.10.4.12	Radiometer	S26-6, S28-2		4.697	4.691
5.10.4.13	CDVU	S26-6, S28-3		4.270	4.328
5.10.4.14.1	Analog + volt. telemtry	S26-6, S28-4		4.005	4.023
5.10.4.14.2	Analog -	S26-6, S28-5		3.939	3.960
5.10.4.15	Electromech.	S28-6		4.051	4.087
5.10.4.16	Outgas volt. telemetry	S26-6, S28-7		5.120	5.100
5.10.5.1.1	Analog + load current	S26-3, S27-11 mV ÷ 10 = Amps		15.518 Amps	15.603
5.10.5.1.2	MUX	S26-3, S27-12 mV ÷ 10 = Amps		41.36 mV (25)	41.88
5.10.5.1.3	Band 1 +	S26-7, S34-1 mV ÷ 0.5 = mA		91.02 (26)	91.63
5.10.5.1.4	Band 1 -	S34-2		-91.20 (27)	-91.84
5.10.5.1.5	2 +	S34-3		90.15 (28)	90.84
5.10.5.1.6	2 -	S34-4		-90.99 (29)	-91.62
5.10.5.1.7	3 +	S34-5		91.33 (30)	91.80
5.10.5.1.8	3 -	S34-6		-90.77 (31)	-91.33
5.10.5.1.9	4 +	S34-7		90.90 (32)	91.67
5.10.5.1.10	4 -	S34-8		-90.60 (33)	-91.23
5.10.5.1.11	5,7 +	S34-9		90.85 (34)	90.68
5.10.5.1.12	5,7 -	S34-10		-90.03 (35)	-89.99
5.10.5.1.13	6 +	S34-11		47.35 (36)	47.69
5.10.5.1.14	Band 6 -	S26-7, S34-12		-47.19 (37)	-47.57
5.10.5.1.15	SMA Htr +	S26-8, S34-1 mV ÷ 0.5 = mA		47.88 (38)	48.33
5.10.5.1.16	SMA Htr - load current	S26-8, S34-2 mV = mA		-8.996 (39)	-9.024

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.5.1.17	SMA +29V load current	S26-8, S34-3	mV ÷ 0.402 = mA	50.74 (46)	51.13
5.10.5.1.18	SMA -29V	S34-4	mV ÷ 0.402 = mA	-50.48 (47)	-50.92
5.10.5.1.19	SMA +7V	S34-5	V ÷ 0.1 = Amps	3782 (48)	281.9
5.10.5.1.20	Analog -	S34-6	mV ÷ 0.402 = mA	-269.3 (49)	-270.8
5.10.5.1.21	Radiometer	S34-9	mV ÷ 0.5 = mA	152.90 (44)	153.04
5.10.5.1.22	CDVU	S34-10	mV ÷ 0.5 = mA	271.7 (45)	275.6
5.10.5.1.23	Electromech. load current	S26-8, S34-11	mV ÷ 0.402 = mA	210.0 (42)	211.3
5.10.5.2.1	Bus power supply voltage	S26-1, S27-1 (S27-3 for RDT)		27.06 (47)	28.04
5.10.5.2.2	Bus input current	S26-1, S27-2 (S27-4 for RDT)	mV ÷ 10 = Amps	157.66 (48)	159.07
5.10.5.2.3	P_{IN} (Section 5.10.3)			363.563 ~~48.44~~	366.697
5.10.5.2.4	P_{IN} (Section 5.10.3)			360.358	366.126
5.10.5.2.5	P_{IN} (avg)			361.84	366.312
5.10.5.2.9	Input current at current limit	26-1, 27-2 (26-1 27-4 Rdt)		161.4 ~~48.44~~	199.2
	Input voltage at current limit	27-1 (27-3 Rdt)		22.83V	22.95V
	MUX voltage at current limit	26-3, 27-1		29.05V	29.38
	MUX current at current limit	27-12		36.23 V	49.04 V
5.10.5.3.1	P_{OUT}			270.317	275.9W
5.10.5.3.2	Efficiency		≥ 70%	75.18%	75.27 %

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AVE [illegible] POWER= [illegible]
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AVE [illegible] POWER= [illegible]
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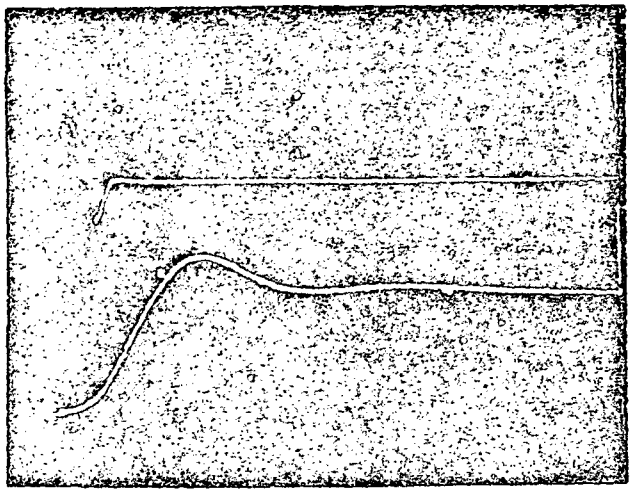
10.4 Performance test (continued)

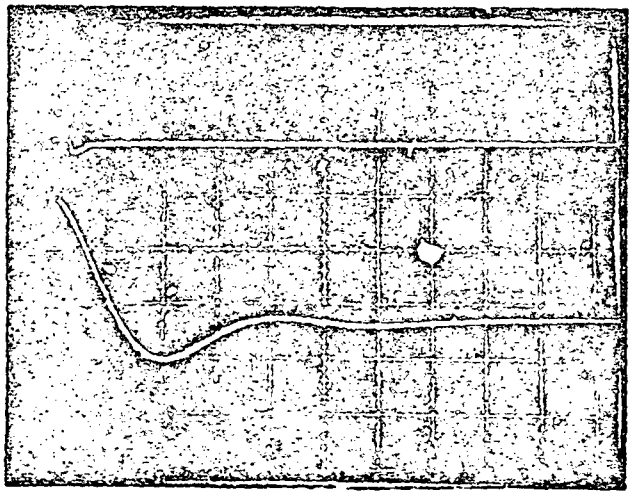
EF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.6.1	+7V output pulsed	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	6.922V	7.082V

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-PRIMARY SIDE



(0.2A) CURRENT/DIV: 0.2 Amp/Div. A.C.
(1V) VOLTAGE/DIV: 1V/Div.
(200uS) SWEEP RATE: 500µSec

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load on SMA +7V outputs is being removed - PRIMARY SIDE

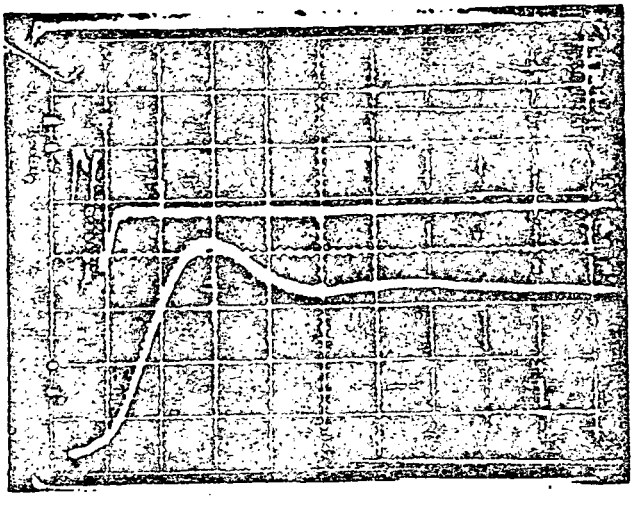


(0.2A) CURRENT/DIV: 0.2A A.C.
(1V) VOLTAGE/DIV: 1V
(200uS) SWEEP RATE: 500µSec.

10.4 Performance test (continued)

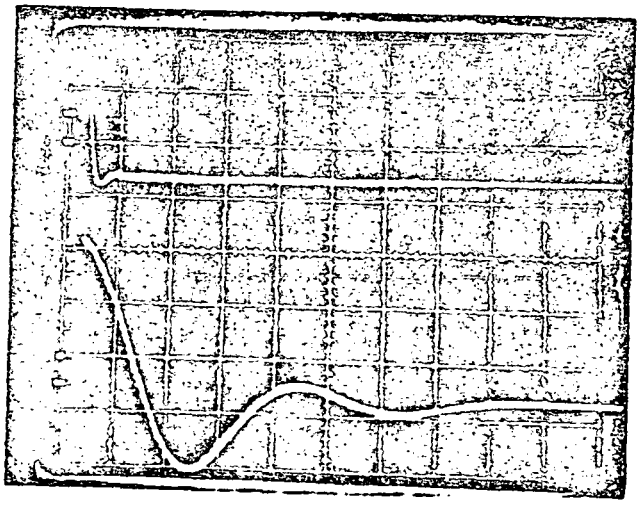
REF. PARA. DESCRIPTION

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-REDUNDANT SIDE



(0.2A) CURRENT/DIV: .2A A.C.
(1V) VOLTAGE/DIV: 1V
(200uS) SWEEP RATE: 500μsec.

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load is being removed-REDUNDANT SIDE

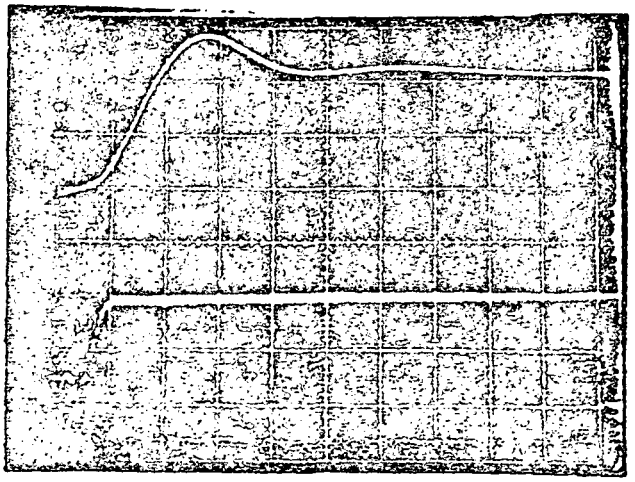


(0.2A) CURRENT/DIV: .2A A.C.
(1V) VOLTAGE/DIV: 1V
(200uS) SWEEP RATE: 500μsec.

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.6.3	Input bus current	S26-1, S27-2 (S27-4 for RDT)	G.Bean 4/4/82 161.59		165.27
5.10.6.4	SMA +7V TM- pulsed	S26-5, S28-7 (S28-8 for RDT)		4.490V	4.643V
5.10.6.5	SMA +7V load current-pulsed	(S26-8, S34-5		456.8mV	463.7mV

5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as SMA +7V output is being pulse-loaded-PRIMARY SIDE

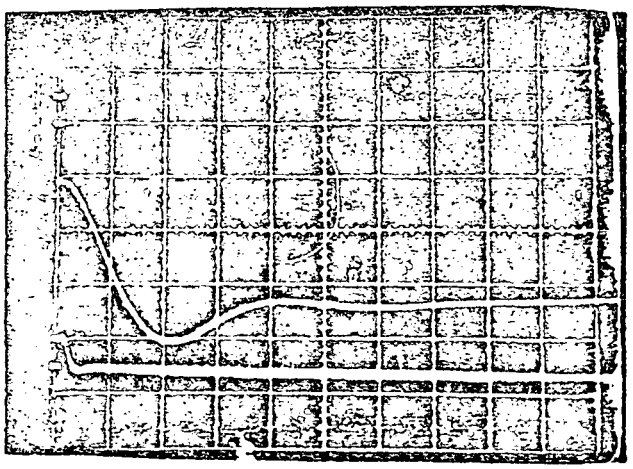


(1A)* SMA CURRENT/DIV: 0.1 v/d
(MA) BUS CURRENT/DIV: 200 mA
(200uS) SWEEP RATE: 50 u Sec
* Using 0.1 Ω shunt and 100 mV/Div on scope

Sect 2

SMA CURRENT

5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as pulse-load is being removed-PRIMARY SIDE



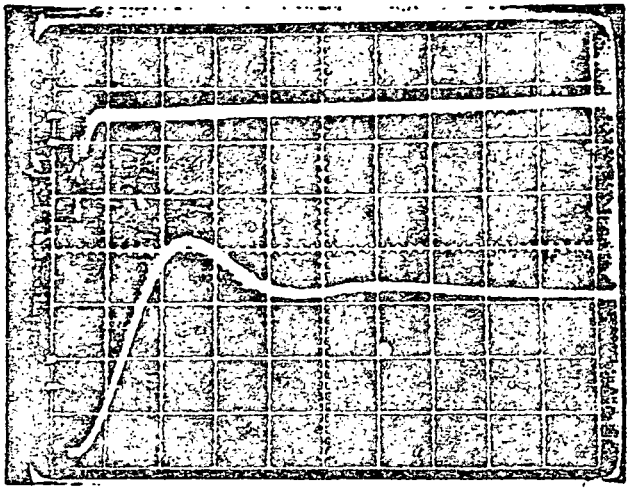
(1A)* SMA CURRENT/DIV: 0.1v/D
(MA) BUS CURRENT/DIV: 200mA
(200uS) SWEEP RATE: 500u Sec
*Using 0.1Ω shunt and 100mV/Div on Scope

SMA current

Sect 2

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION
5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as SMA + 7V output is being pulse loaded - REDUNDANT SIDE

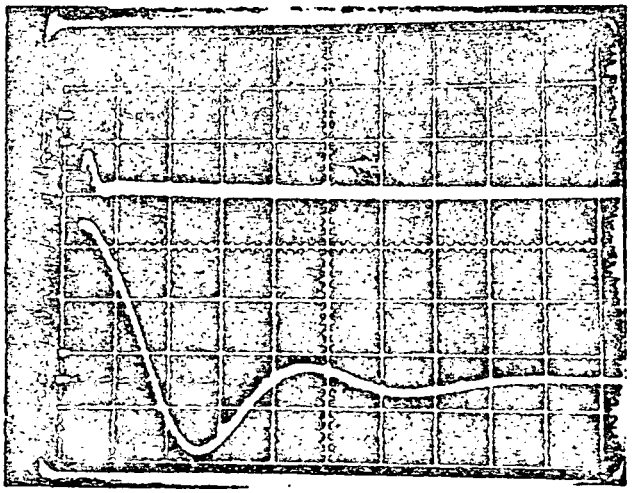


(1A)* SMA CURRENT/DIV: 0.1V
(2A) BUS CURRENT/DIV: 0.2A
(200uS) SWEEP RATE: 500µSec

*Using 0.1Ω shunt and 100 mV/Div on scope.

SCN 2

5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as pulse-load is removed - REDUNDANT SIDE



(1A)* SMA CURRENT/DIV: 0.1V
(2A) BUS CURRENT/DIV: 0.2A
(200uS) SWEEP RATE: 500µSec.

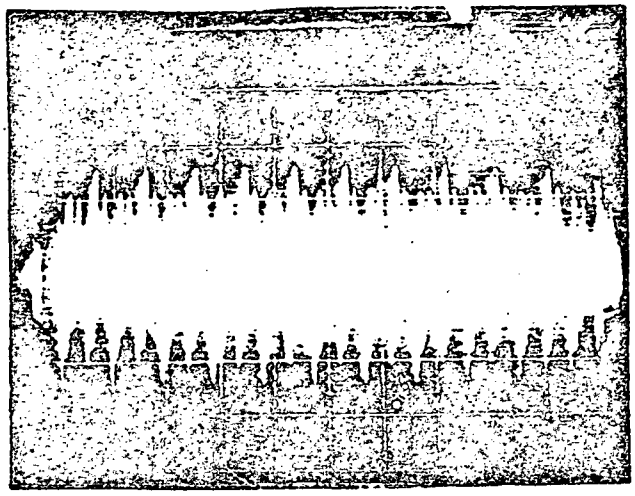
*Using 0.1Ω shunt and 100mV/Div on scope.

SCN 2

10.4 Performance test (continued)

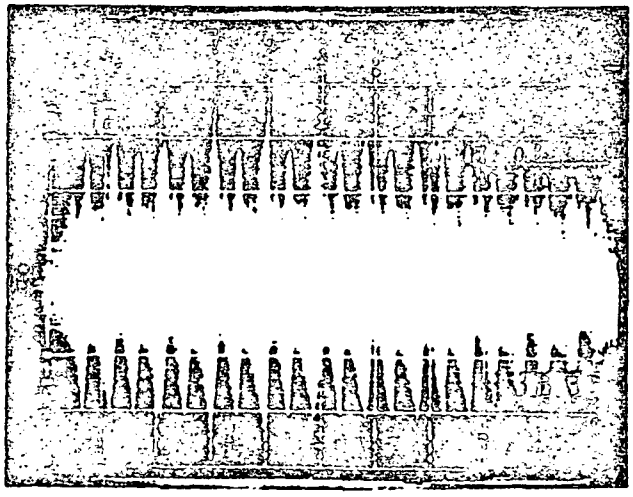
REF. PARA.	DESCRIPTION

.10.7.1 Photograph of reflected input current ripple - PRIMARY SIDE



(1mA) CURRENT/DIV: 2mA A.C.
(2uS) SWEEP RATE: 10μSec

5.10.7.1 Photograph of reflected input current ripple - REDUNDANT SIDE



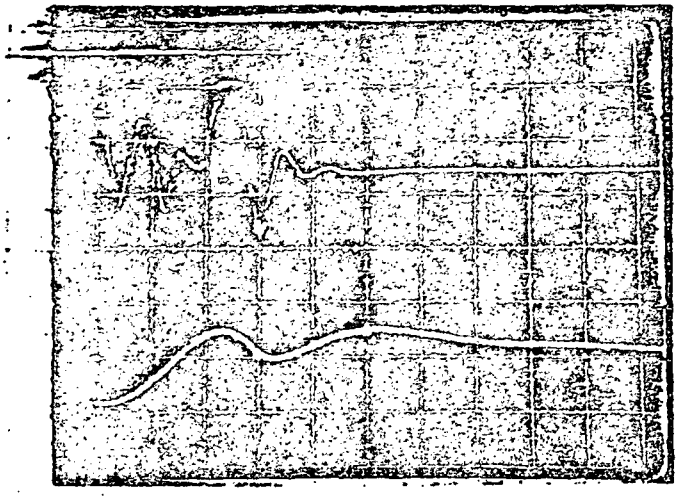
(1mA) CURRENT/DIV: 2mA A.C.
(10uS) SWEEP RATE: 10μSec.

239

5.10.8.1.1 Input current - full load S26-1, S27-2 (S27-4 for RDT) 156.16mV 158.77mV

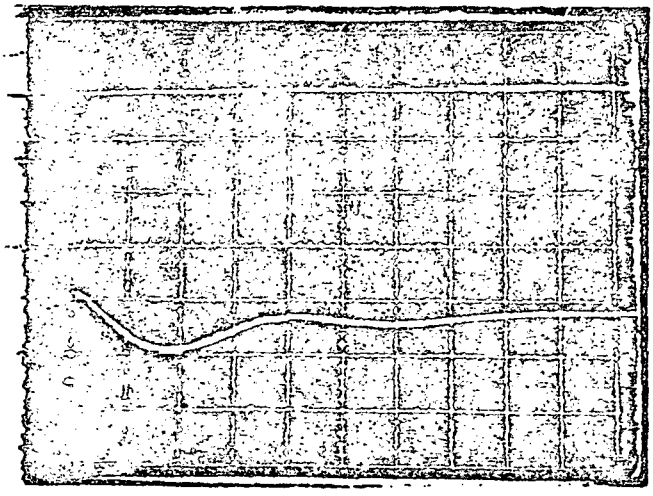
5.10.8.1.2 Input current w/o analog load Same 126.90mV 123.43

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 2Amp
(500uS) SWEEP RATE: 500μSec.

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is disabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 2Amp
(1mS) SWEEP RATE: 500μSec

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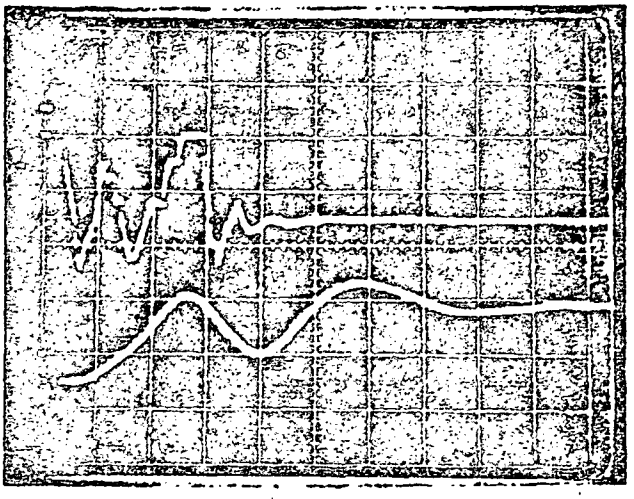
10.4 Performance test (continued)

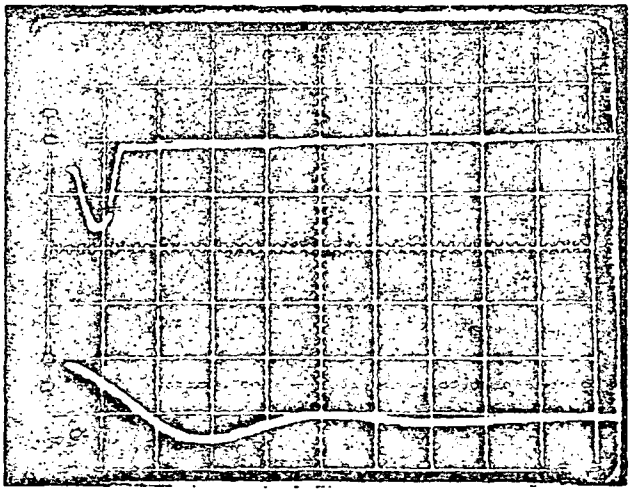
REF. PARA.	DESCRIPTION

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is enabled - REDUNDANT SIDE.



(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 2A
(500uS) SWEEP RATE: 500μSec.

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is disabled - REDUNDANT SIDE.



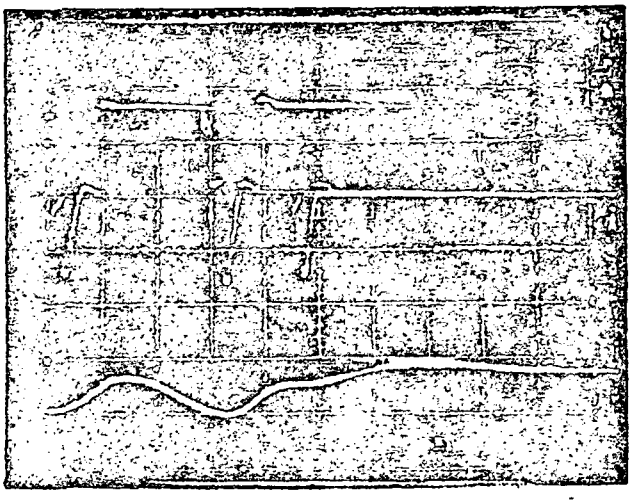
(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 2A.
(1mS) SWEEP RATE: 500μSec.

241

10.4 Performance test (continued)

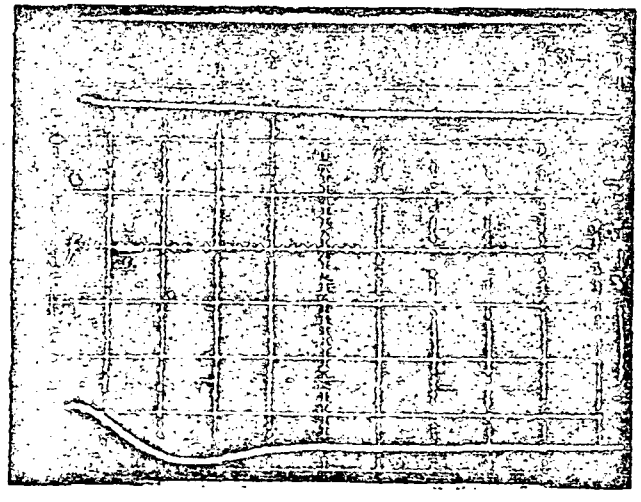
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.2.1	Input bus current w/o SMA +7V load	S26-1, S27-2 (S27-4 for RDT)		146.20mV	145.8mV

5.10.8.2.2 Photograph of transients induced on ~~input~~ bus ~~current~~ and SMA +7V output voltage as SMA +7V is enabled - PRIMARY SIDE.



(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1Amp.
(200mS) SWEEP RATE: 50μSec

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - PRIMARY SIDE.



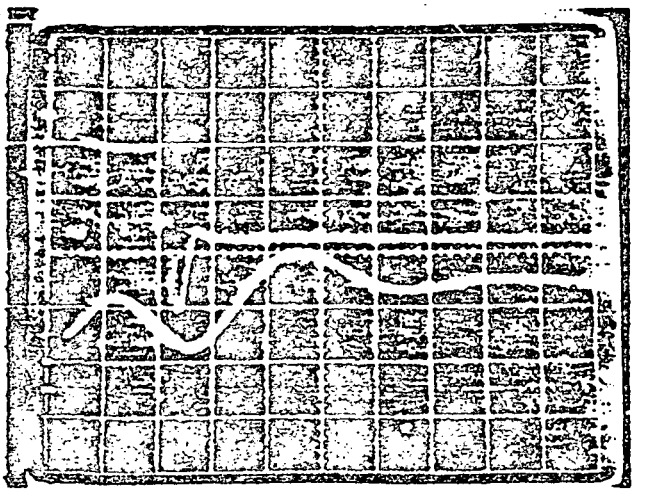
(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1Amp
(2mS) SWEEP RATE: 500μSec.

262

10.4 Performance test (continued)

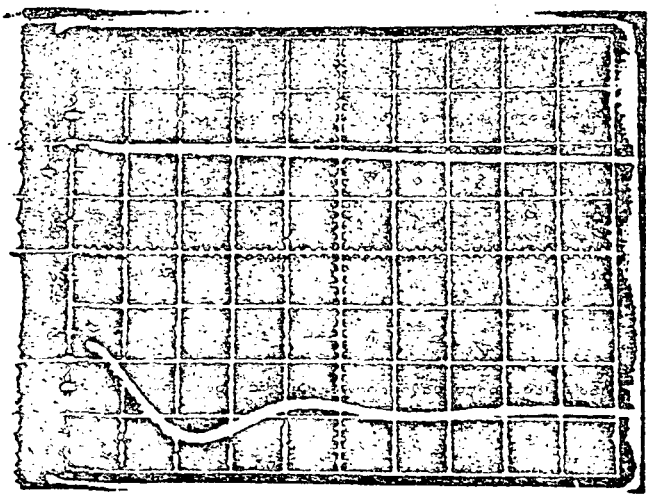
REF. PARA.	DESCRIPTION

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7 output voltage as SMA +7V is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(200uS) SWEEP RATE: 500μSec.

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - REDUNDANT SIDE



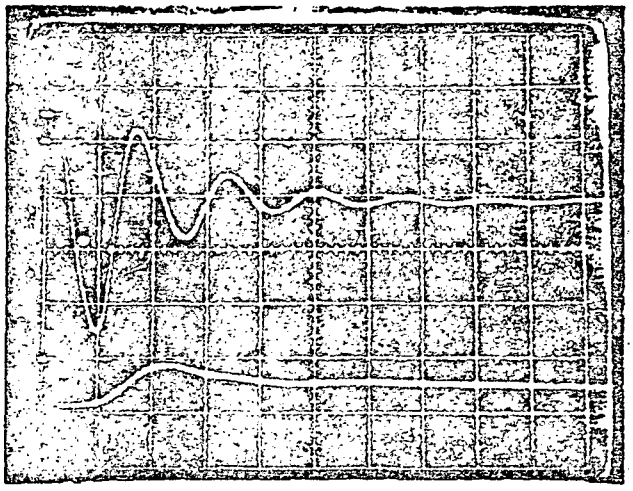
(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(2mS) SWEEP RATE: 500μSec.

243

10.4 Performance test (continued)

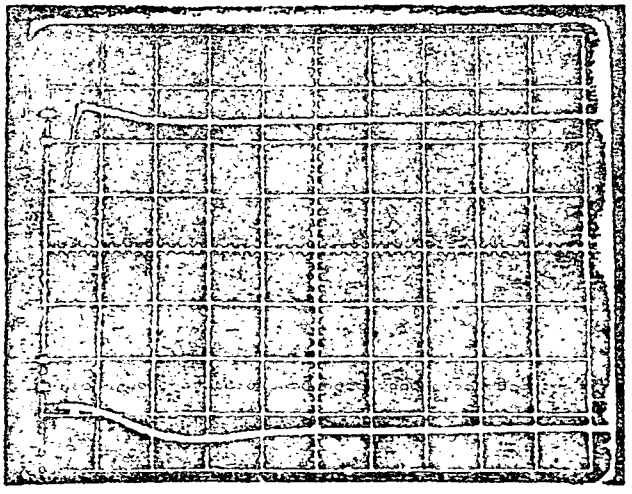
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.2.3	Input bus current w/o SMA ±29V load	S26-1, S27-2 (S27-4 for RDT)		153.1 mA	154.1 mA

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA +29V is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1V
(0.5V) CURRENT/DIV: 0.5A
(1mS) SWEEP RATE: 500μS/DIV

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is disabled - PRIMARY SIDE



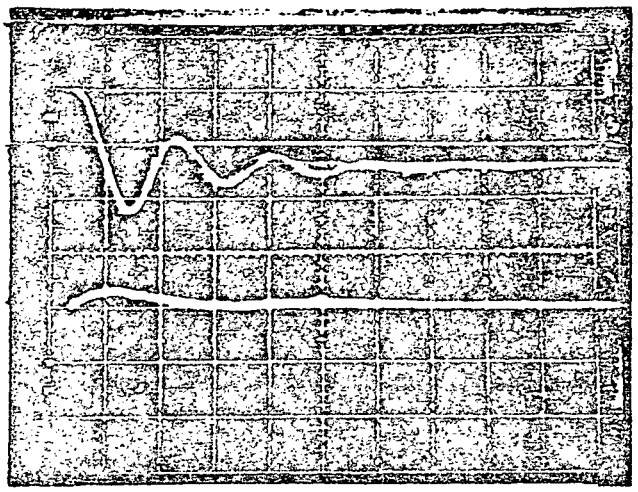
(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: 0.5A
(1mS) SWEEP RATE: 500μS/DIV

244

10.4 Performance test (continued)

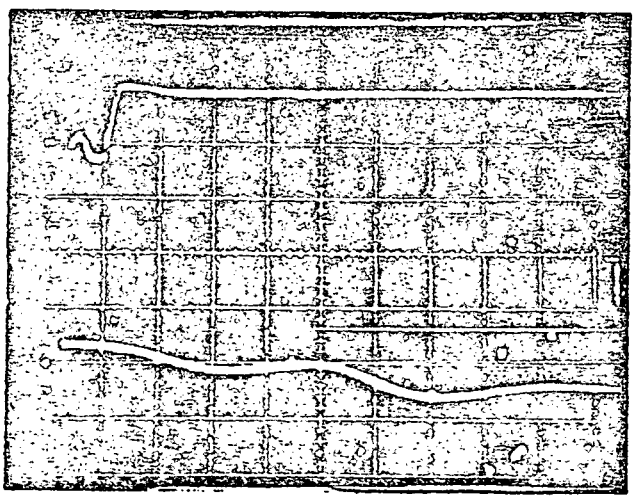
REF. PARA.	DESCRIPTION

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: 0.5A
(1mS) SWEEP RATE: 500 μSec.

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as ±29V is disabled - REDUNDANT SIDE



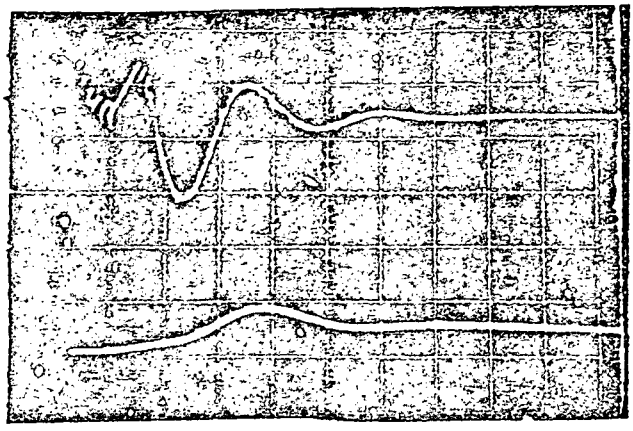
(2V) VOLTAGE/DIV: 1V
(0.5) CURRENT/DIV: 0.5A
(1mS) SWEEP RATE: 500 μSec.

245

10.4 Performance test (continued)

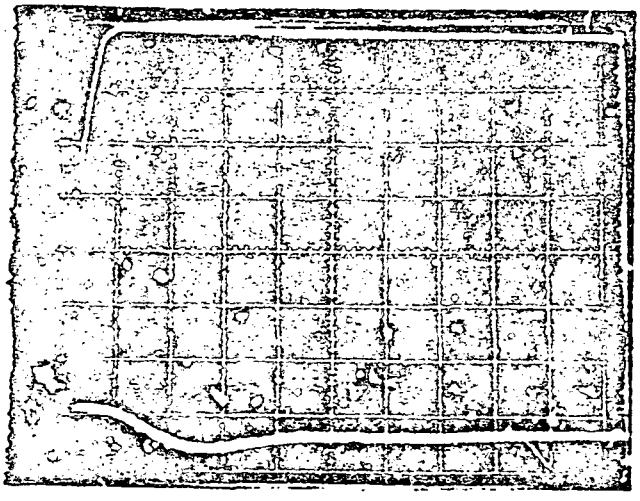
EF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.3.1	Input bus current w/o CDVU load	S26-1, S27-2 (S27-4 for RDT)		152.92mV	155.50 mV

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: 0.5 Amps
(1mS) SWEEP RATE: 500 μSec.

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is disabled - PRIMARY SIDE



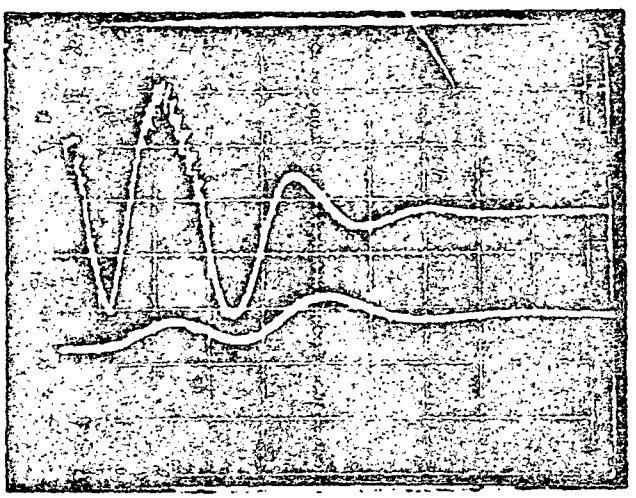
(2V) VOLTAGE/DIV: 1V
(0.5V) CURRENT/DIV: 0.5 Amps
(1mS) SWEEP RATE: 500 μSec

2.46

10.4 Performance test (continued)

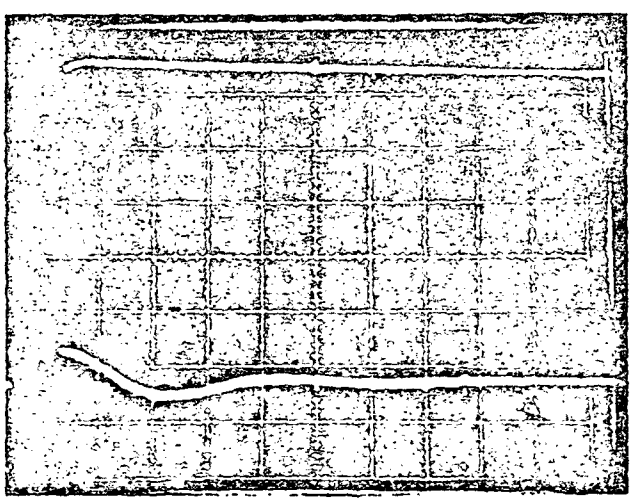
REF. PARA.	DESCRIPTION

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: 0.5Apa
(1mS) SWEEP RATE: 500μSec.

5.10.8.3.2 Photograph as transients induced on input bus current and CDVU output voltage as CDVU is disabled - REDUNDANT SIDE



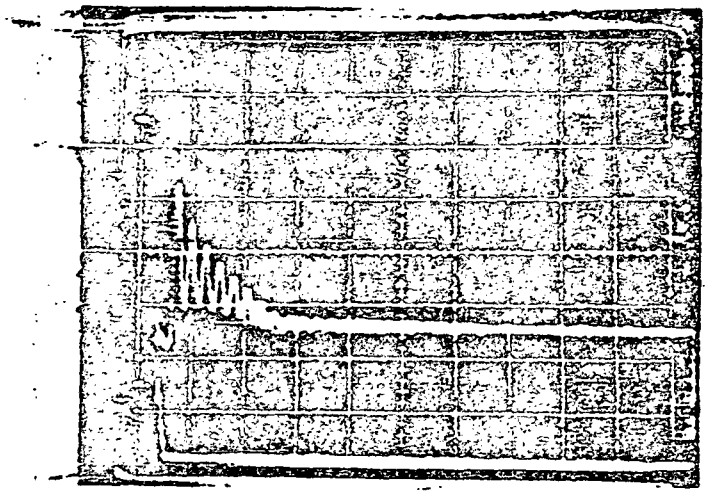
(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: 0.5Apa
(1mS) SWEEP RATE: 500μSec.

247

10.4 Performance test (continued)

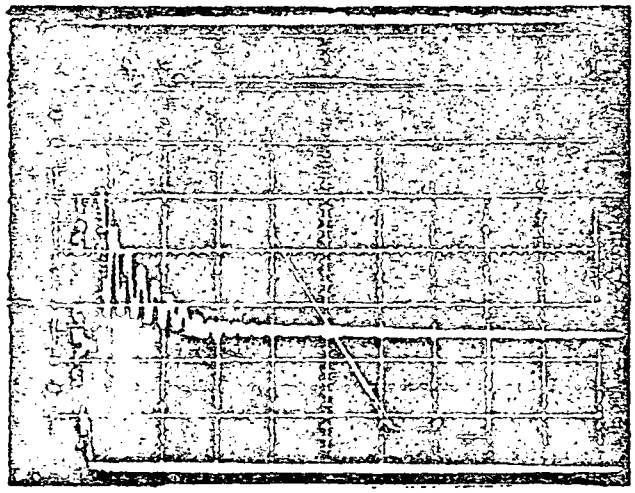
EP, PARA.	DESCRIPTION

5.10.9.1 Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(500uS) SWEEP RATE: 500uSec

Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - REDUNDANT SIDE



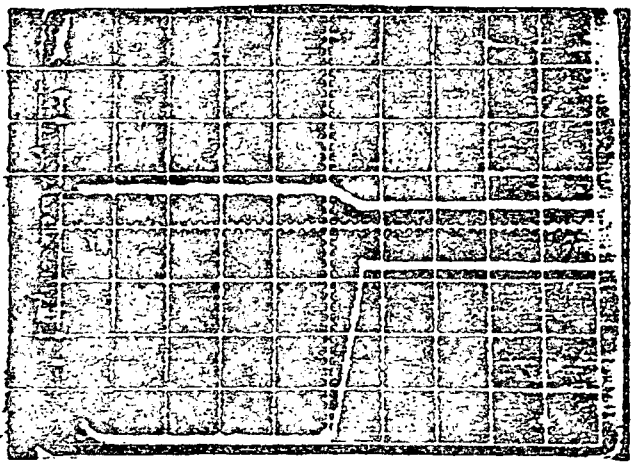
(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(500uS) SWEEP RATE: 500uSec.

248

10.4 Performance test (continued)

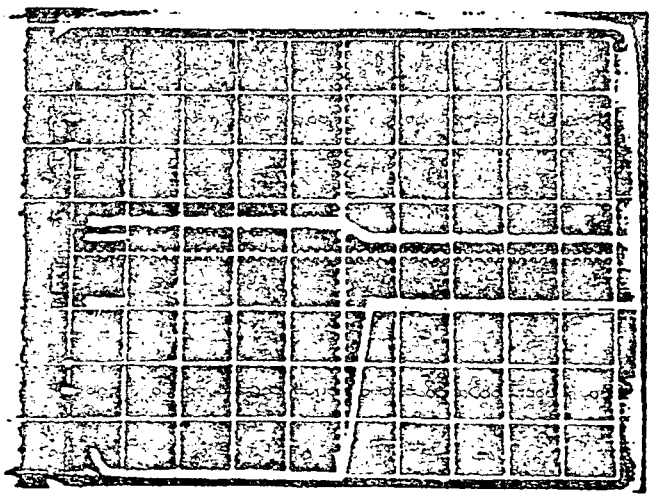
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.9.2	UUT stays off when bus is reapplied.	S1-ON (S2-ON for RDT)	--	✓	✓

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5Amps
(100mS) SWEEP RATE: 100mSec

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - REDUNDANT SIDE



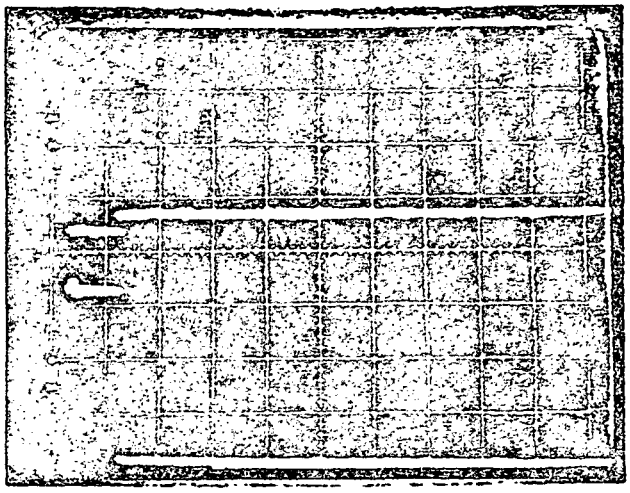
(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5Amps
(100mS) SWEEP RATE: 100mSec.

249

10.4 Performance test (continued)

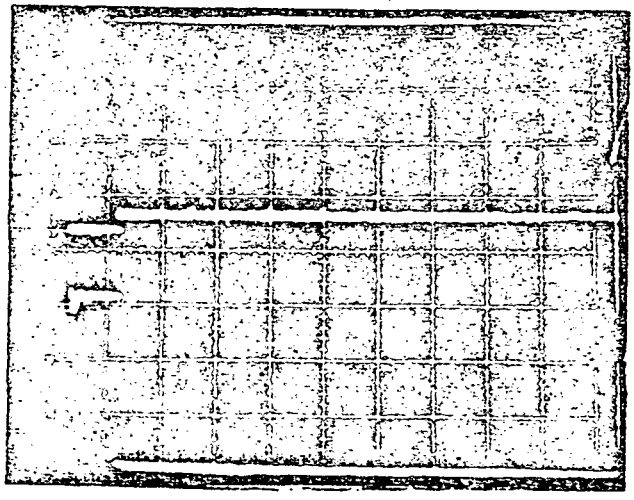
REF. PARA.	DESCRIPTION

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5 Amps
(10mS) SWEEP RATE: 10 mSec

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5 Amps.
(10mS) SWEEP RATE: 10 mSec.

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	PRIMARY	REDUNDANT
5.10.9.5	Record	S27-2 (S27-4)		158.91mV	158.76
5.10.9.6	Record	(S27-4 (S27-2)		90.71mV	5.434V
	Record	S27-2 (S27-4)		57.94mV	151.48
5.10.9.7	Record that UUT turns on.	(Checkmark)		✓	✓
5.10.10.1	Input bus current AFTER it reads ~ 17A AND input bus voltage reads ~ 21V.	S26-1, S27-2 (S27-4 for RDT)		151.05 150.58 mV G. Brown 4/4/81	151.39mV
5.10.10.2	Input bus voltage with 17.0A load	S26-1, S27-1 (S27-3 for RDT)		23.04V	23.05V
5.10.10.3	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		4.618V	4.580V
5.10.10.4	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.582V	3.561V
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.03V	23.03V
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		122.33mV	120.84mV
5.10.10.5	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.049V	2.994V
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.05V	23.04V
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		102.72mV	103.12mV
5.10.10.6	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.527V	2.535V
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.03V	23.03V
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		88.81mV	92.16mV
5.10.10.7	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.087V	2.028V
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.05V	22.99V
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		73.96V	76.64V

10,4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.10.8	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.5292V	1.5118V
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.02V	23.04V
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		56.82mV	60.34mV
5.10.10.9	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.1053V	1.0653V
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.04V	23.02V
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		46.06mV	47.44mV
5.10.10.10	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		0.4606V	0.5107V
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.00V	23.04V
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		31.64mV	20.66mV
5.10.10.11	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		0.2315V	75.84mV 0.2283V
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.02V	23.01V 23.02V
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		17.740mV	13.35mV 21.59mV
5.10.10.12	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		75.84mV	74.21mV
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.01V	23.00V
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		13.251mV	13.561mV
5.10.11.1	Band 1+ output voltage	S26-1, S27-5		23.12V	23.27V
5.10.11.2	Band 1- output voltage	S27-6		-23.21	-23.01
5.10.11.3	2+	S27-7		23.31	22.87
5.10.11.4	2-	S27-8		-23.32	-23.12
5.10.11.5	3+	S27-9		23.82	23.14
5.10.11.6	3-	S27-10		-22.91	-22.94
5.10.11.7	Band 4+ output voltage	S26-1, S27-11		23.36	23.18

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT	
5.10.11.8	Band 4- output voltage	S26-1, S27-12		-23.18 V	-23.07	
5.10.11.9	5,7+	S26-2, S27-1		-22.71 V	22.81	
5.10.11.10	5,7-	S27-2		-22.66	-22.72	
5.10.11.11	6+	S27-3		22.55	22.66	
5.10.11.12	Band 6-	S27-4		-22.82	-22.81	
5.10.11.13	SMA Htr +	S27-5		24.41	24.68	
5.10.11.14	Htr -	S27-6		-24.86	-24.78	
5.10.11.15	+7V	S27-7		8.939	N/A	SCN-2
5.10.11	+7V	(S27-8 For RDT)		N/A	9.021	SCN-2
5.10.11	+29V	S27-9		31.74	N/A	SCN-2
5.10.11	+29V	(S27-11 For RDT)		N/A	31.99	SCN-2
5.10.11	-29V	S27-10		-32.05	N/A	SCN-2
	SMA -29V	S26-2, (S27-12 for RDT)		N/A	-31.82	SCN-2
5.10.11.18	Radiometer	S26-3, S27-2		9.508V	9.546	
5.10.11.19	CDVU	S27-3		9.219	9.308	
5.10.11.20	Analog +	S27-4		25.95	24.24	
5.10.11.21	Analog -	S27-5		-23.62	-23.25	
5.10.11.22	Electromech.	S27-6		38.48	38.23	
5.10.11.23	Outgas	S27-7		101.07	22.87	
5.10.11.24	Parasitic	S27-9		30.92	N/A	SCN-2
	Parasitic output voltage	S26-3, (S27-10 for RDT)		N/A	31.31	SCN-2
5.10.11.25	Band 1+ TM output	S26-4, S28-5		4.216	4.250	
5.10.11.26	1-	S28-6		4.216	4.177	
5.10.11.27	2+	S28-7		4.239	4.163	
5.10.11.28	2-	S28-8		4.218	4.181	
5.10.11.29	3+	S28-9		4.328	4.209	
5.10.11.30	3-	S28-10		4.169	4.134	
5.10.11.31	4+	S28-11		4.235	4.206	
5.10.11.32	4-	S26-4, S28-12		4.208	4.168	
5.10.11.33	Band 5,7+ TM output	S26-5, S28-1		4.146	4.165	

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.11.34	Band 5,7- TM output	S26-5, S28-2		4.118	4.131
5.10.11.35	6+	S28-3		4.076	4.103
5.10.11.36	Band 6-	S28-4		4.153	4.156
5.10.11.37	SMA Htr +	S28-5		4.451	4.508
5.10.11.38	Htr -	S28-6		4.501	4.486
5.10.11.39	+7V	S28-7 (S28-8 for RDT)		5.508	5.553
5.10.11.40	+29V	S28-9 (S28-11 for RDT)		4.329	4.388
5.10.11.41	SMA -29V	S26-5, S28-10 (S28-12 for RDT)		4.068	4.056
5.10.11.42	Radiometer	S26-6, S28-2		5.152	5.228
5.10.11.43	CDVU	S28-3		5.106	5.154
5.10.11.44	Analog +	S28-4		4.590	4.661
5.10.11.45	Analog -	S28-5		3.924	3.960
5.10.11.46	Electromech.	S28-6		4.696	4.666
5.10.11.47	Outgas - TM output	S26-6, S28-7		5.032	4.970
5.10.12.1	Bus voltage	S26-1, S27-1 (S27-3 for RDT)		23.07V	23.02V
5.10.12.2	Input bus current	S26-1, S27-2 (S27-4 for RDT)		50.36mV	50.24mV
5.10.12.3	SMA Htr + output voltage	S26-2, S27-5		21.62V	21.75
5.10.12.4	Htr + ripple	Seen on Scope	<630 mV pk-pk	70	80
5.10.12.5	Htr - voltage	S26-2, S27-6		-22.12V	-22.27V
5.10.12.6	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	50	80
5.10.12.7	CDVU voltage	S26-3, S27-3		7.550V	7.496V
5.10.12.8	CDVU ripple	Seen on Scope	<240 mV pk-pk	50	80
5.10.12.9	Outgas - output voltage	S26-3, S27-7		86.66V	85.95V
5.10.12.10	Outgas - output ripple	Seen on Scope	2.50V pk-pk	250mV	330mV
5.10.12.11	Parasitic output voltage	S26-3, S27-9 (S27-10 for RDT)		30.36V	30.32
5.10.12.12	Parasitic output ripple	Seen on Scope	<900 mV pk-pk	150	220

Sh 2

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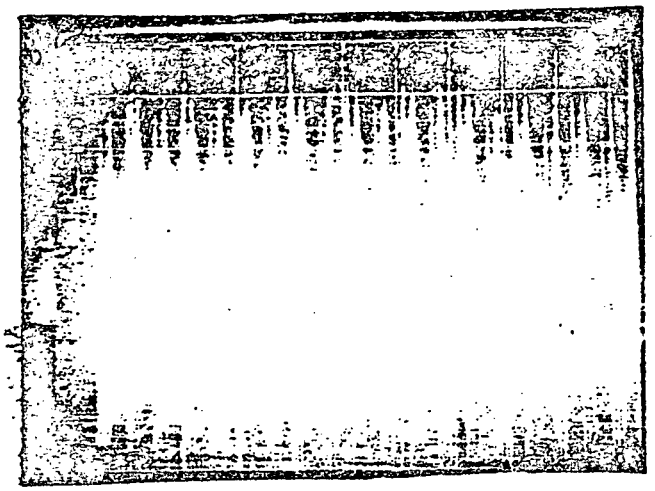
10.4 Performance test (continued)

EF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.13.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		1.3440 V	1.3364
5.10.13.2	SMA Htr + output	S26-5, S28-5		3.950 V	3.981 V
5.10.13.3	SMA Htr -	S26-5, S28-6		4.011 V	4.038 V
5.10.13.4	CDVU	S26-6, S28-3		4.240 V	4.319 V
5.10.13.5	Outgas output telemetry	S26-6, S28-7		4.326 V	4.315 V

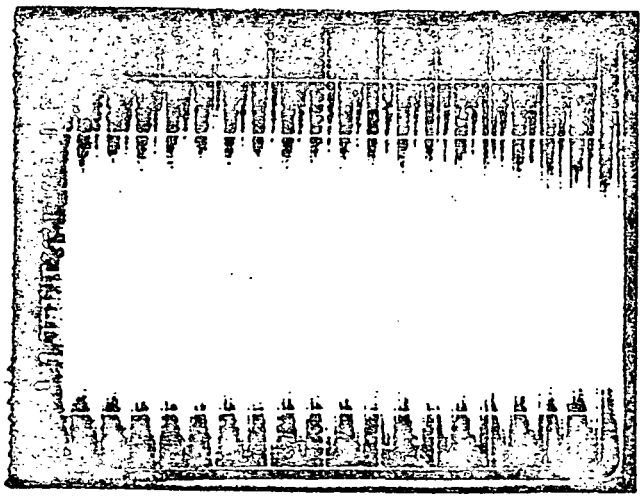
5.10.14.1 Photograph of reflected input current ripple in outgas mode — PRIMARY SIDE



(2mA) CURRENT/DIV: 2mA A.C.

(10uS) SWEEP RATE: 10 μSec.

5.10.14.1 Photograph of reflected input current ripple in outgas mode — REDUNDANT SIDE



(2mA) CURRENT/DIV: 2mA A.C.

(10uS) SWEEP RATE: 10 μSec.

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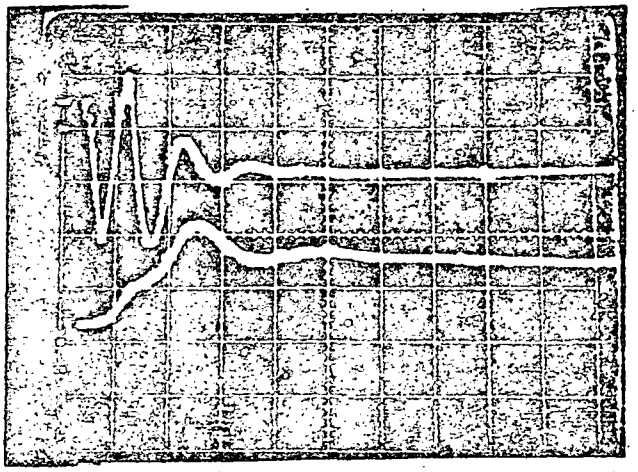
10.4 Performance test (continued)

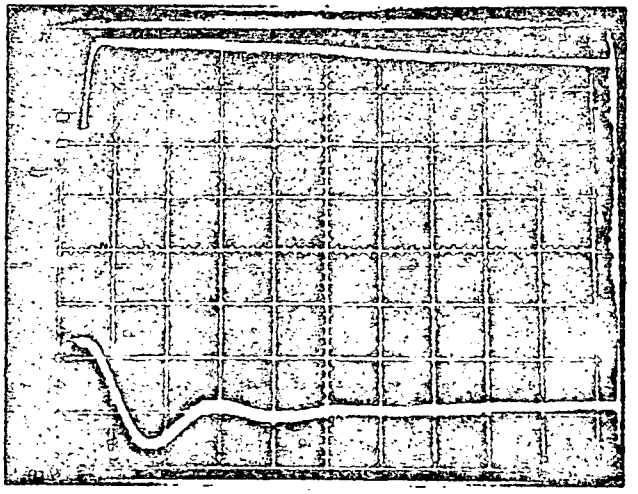
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.1.1	Input current with CDVU off.	S26-1, S27-2 (S27-4 for RDT)		47.48mA	47.26mA

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1V
(200mA) CURRENT/DIV: 200mA/div
(1mS) SWEEP RATE: 1mS

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1V
(200mA) CURRENT/DIV: 200mA/div
(2mS) SWEEP RATE: 1mS

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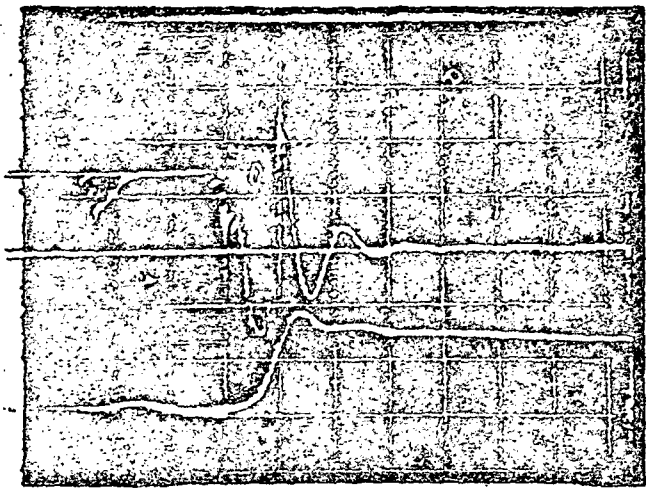
10.4 Performance test (continued)

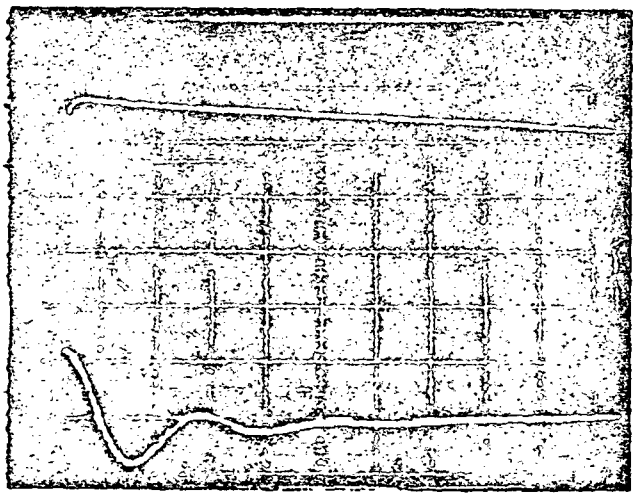
REF. PARA.	DESCRIPTION

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled — REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(200mA) CURRENT/DIV: 200mA.
(1mS) SWEEP RATE: 1mSec.

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled — REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(200mA) CURRENT/DIV: 200mA.
(2mS) SWEEP RATE: 1mSec.

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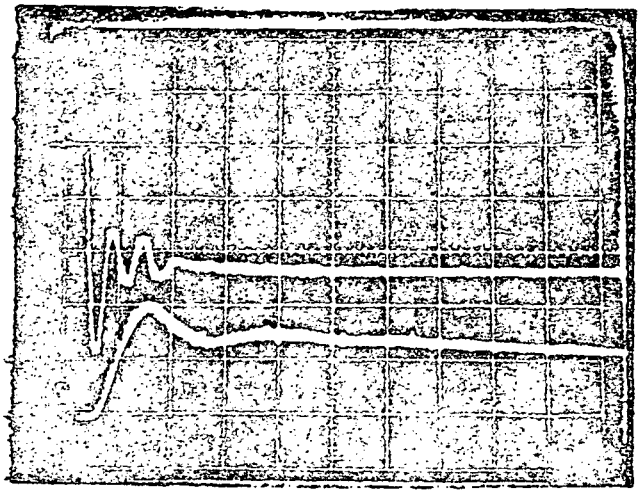
10.4 Performance test (continued)

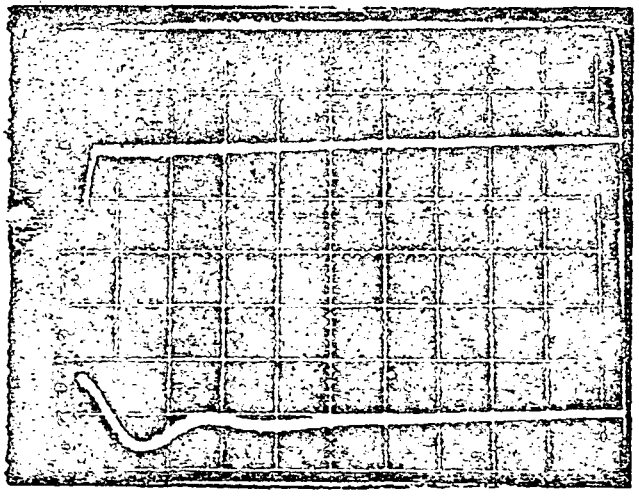
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.2.1	Input bus current with outgas disabled	S26-1, S27-2 (S27-4 for RDT)		16.826 mV	17.404 mV

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(2mS) SWEEP RATE: 1mS

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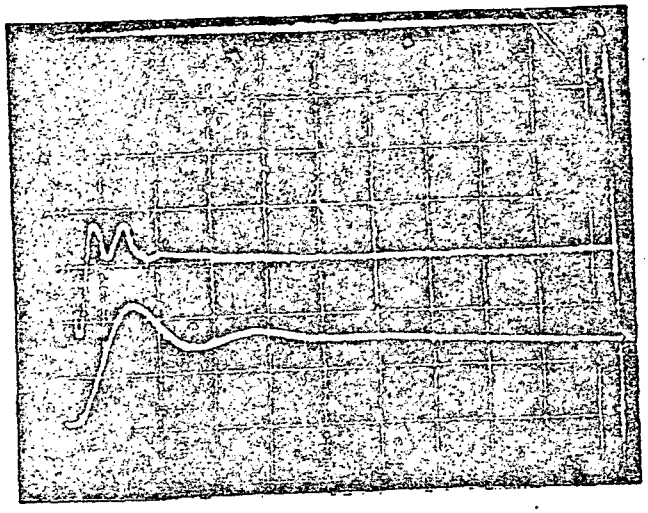
10.4 Performance test (continued)

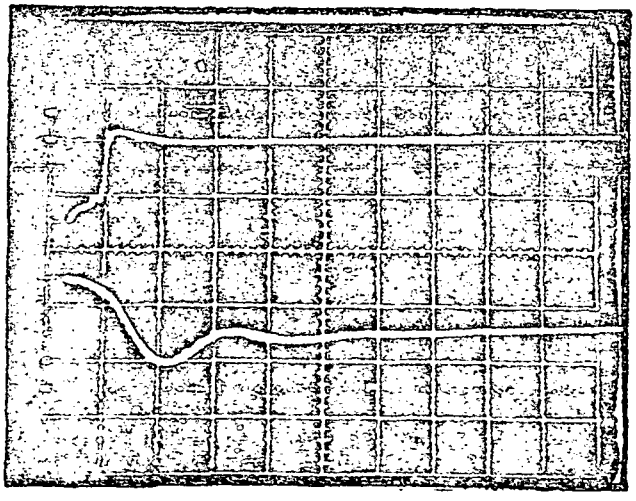
REF. PARA.	DESCRIPTION

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(500uS) SWEEP RATE: 1mSec.

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A.
(1mS) SWEEP RATE: 1mSec.

10.4 Performance test (continued)

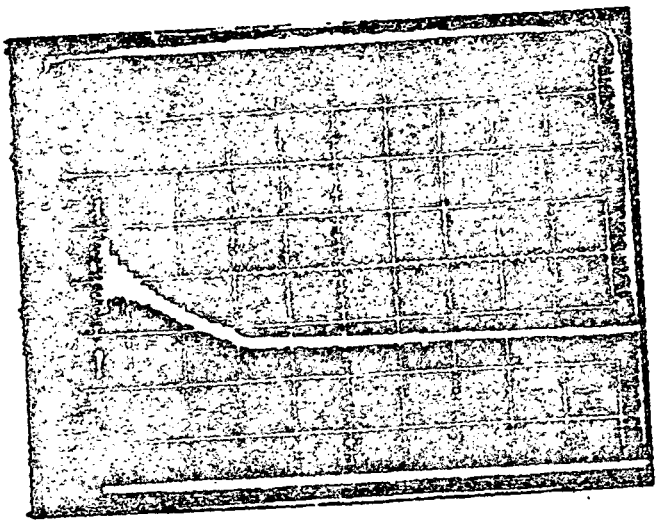
REF. PARA.	DESCRIPTION	DVM SWITCH POSITION	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.16.1	BPS voltage	S26-1, S27-1 (S27-3 for EDT)		23.07V (49)	23.04V
5.10.16.2	BPS current	S26-1, S27-2 (S27-4 for EDT)		20.31mV (50)	20.93mV
5.10.16.3	SMA Htr +output voltage	S26-2, S27-5		21.64V (13)	21.81V
5.10.16.4	SMA Htr +load current	S26-8, S34-1		46.64mV (38)	47.03
5.10.16.5	SMA Htr -output voltage	S26-2, S27-6		-22.01V (4)	-22.23V
5.10.16.6	SMA Htr -load current	S26-8, S34-2		-8.690V (79)	-8.776V
5.10.16.7	CDVU output voltage	S26-3, S27-3		7.546V (20)	7.688V
5.10.16.8	CDVU load current	S26-8, S34-10		269.7mV (45)	274.8mV
5.10.16.9	Parasitic output voltage	S26-3, S27-9 (S27-10)		30.56V (23)	30.86V
5.10.16.10	Parasitic load current	S26-8, S34-7		142.41 (46)	143.82
5.10.16.11	Input power (5.10.16.1 x 5.10.16.2)			46.855	48.223
5.10.16.12	Output power ((5.10.16.3 x 5.10.16.4) + (5.10.16.5 x 5.10.16.6) + (5.10.15.7 x 5.10.16.8) + (5.10.16.9 x 5.10.16.10))	(Primary) NR	(Redundant) NR	17.106	17.512
5.10.16.13	Efficiency ((5.10.16.12) ÷ (5.10.16.11)) x 100%			36.5%	36.3%

SMA HTR+= 1.913
SMA HTR-= .151
CDVU= 4.87
PARASITIC= 10.826
INPUT POWER= 46.855
OUTPUT POWER= 17.106
EFFICIENCY= 36.5 %

SMA HTR+= 1.951
SMA HTR-= .195
CDVU= 4.225
PARASITIC= 11.04
INPUT POWER= 48.223
OUTPUT POWER= 17.512
EFFICIENCY= 36.3 %

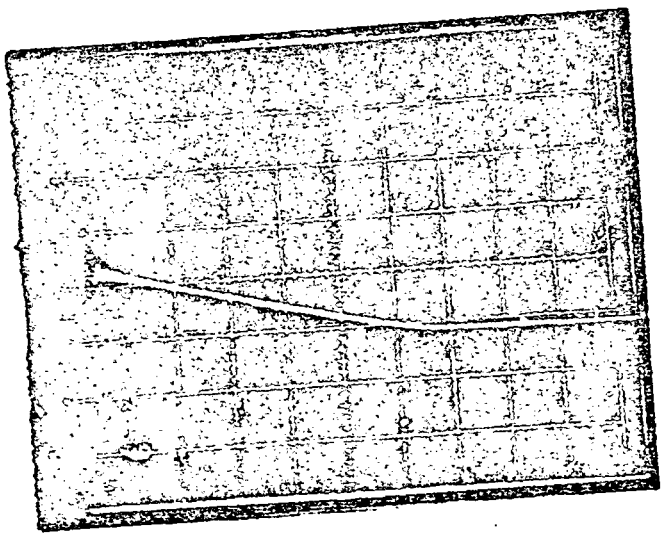
10.4 Performance test (continued)

5.10.17.1 Photograph of input bus current and input bus voltage as is disable - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2 Amps
(1mS) SWEEP RATE: 1mS

5.10.17.1 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2 Amps
(1mS) SWEEP RATE: 1mSec.

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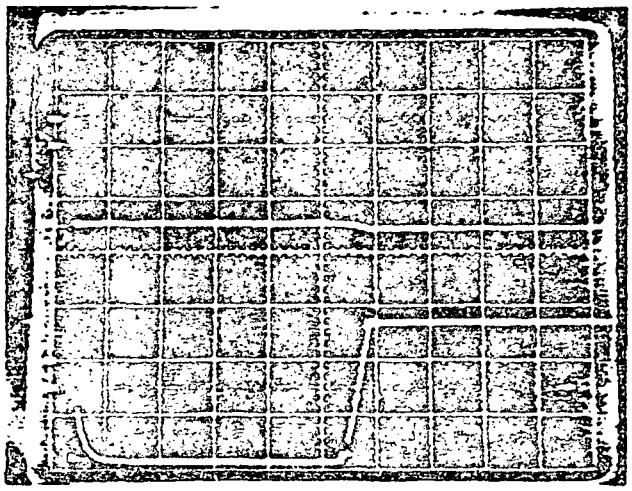
10.4 Performance test (continued)

5.10.17.2 Unit stays off (check)

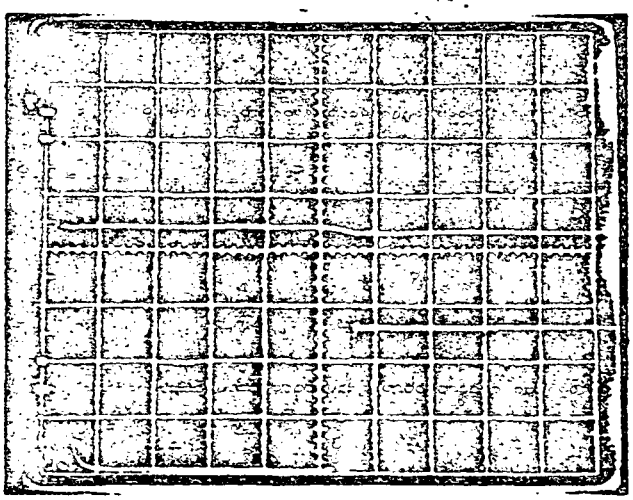
✓ Primary ✓ Redundant

5.10.17.3 Photograph of input bus current and input bus voltage as is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(100mS) SWEEP RATE: 100mS

5.10.17.3 Photograph of input bus current and input bus voltage as as is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(100mS) SWEEP RATE: 100mS

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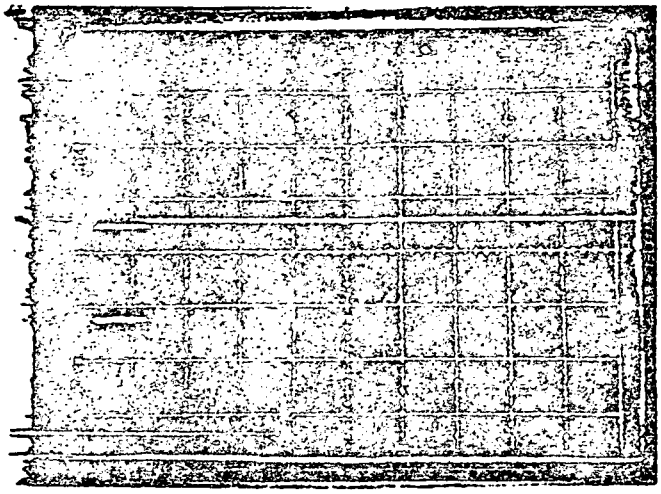
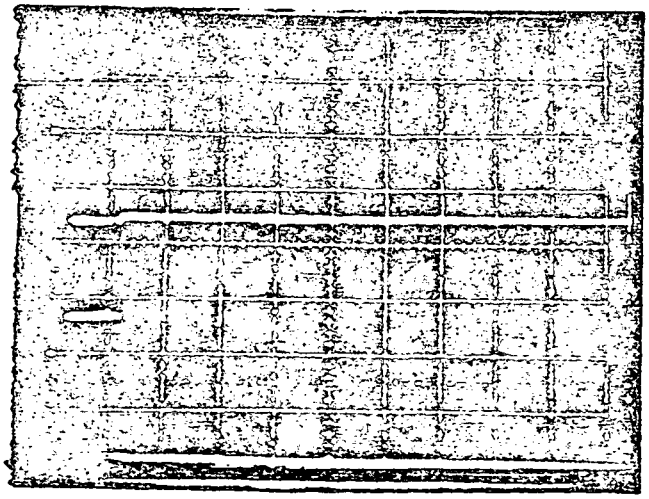
10.4 Performance test (continued)

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 10mSec

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 10mSec

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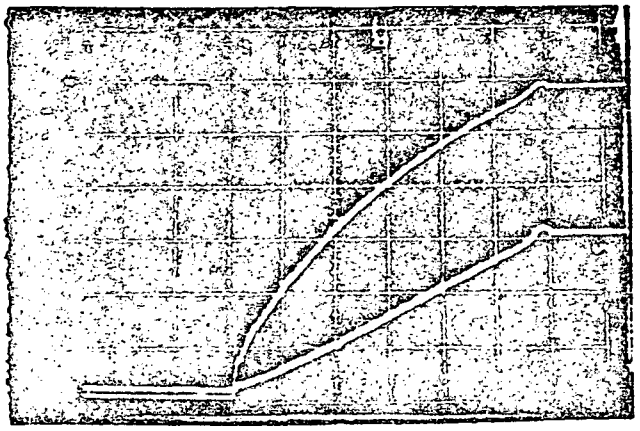
10.4 Performance test (continued)

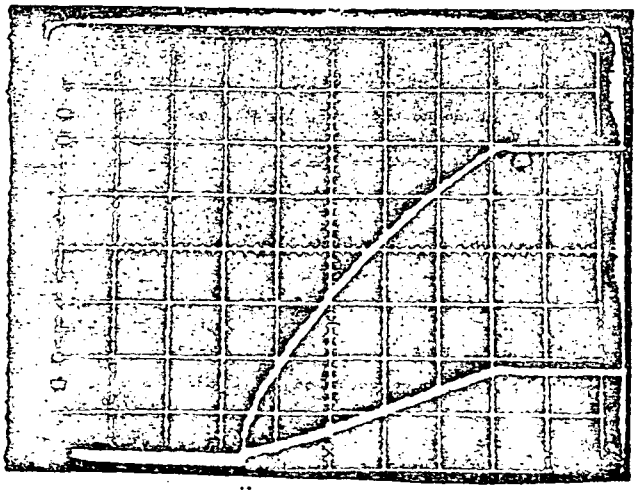
T. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.17.5	Record that UUT operates correctly.		(checkmark)	✓	✓

5.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 10mS

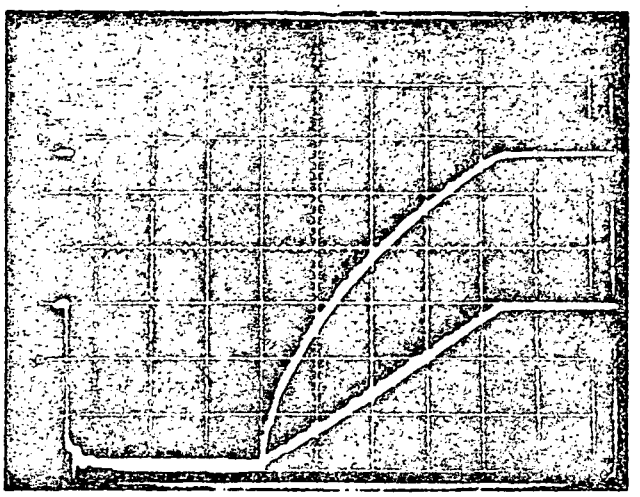
5.10.18.2 Photograph of input bus current and parasitic output voltage as parasitic enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 10mSec

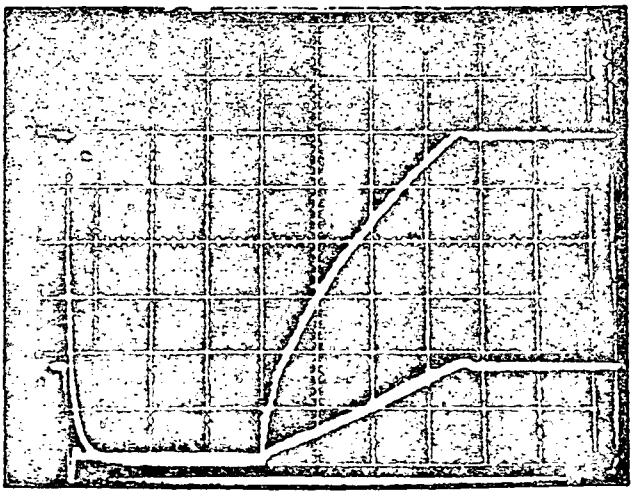
10.4 Performance test (continued)

.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 10m Sec

.10.18.2 Photograph of input bus current and MUX output voltage as parasitic enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5v) Volts/Div: 5V
(5A) Current/Div: 5A
(20mS) Sweep Rate: 10m Sec

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	PCM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.18.4	Undervoltage Trip Point (ON/OFF)	S26-1, S27-1 (S27-3 for RDT)	18.0 ±1.50V	18.016	18.042
5.10.18.5	UUT stays OFF			✓	✓
5.10.18.6	Undervoltage Trip Point (OFF/ON)	S26-1, S27-1 (S27-3 for RDT)	19.0 ±1.50V	18.919	18.89
5.10.18.7	Overvoltage Trip Point	S26-1, S27-1 (S27-3 for RDT)	38.0 ± 2V	38.50 ✓	38.86 SCN 2
5.10.18.8	UUT stays OFF			✓	✓
5.10.18.9	UUT turns ON			✓	✓

2/4/82
DATE

ELLARS/PEWSON
TESTER(S)

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10.4 Performance test - Long Form

PROTOFLIGHT N/A, OR FLIGHT ✓, S/N 004 TEMPERATURE: AMB

IN-PROCESS N/A, QUAL N/A, OR ACCEPTANCE ✓

TESTING PHASE FINAL AMBIENT LINE VOLTAGE: 28 VOLTS

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.1.1	Calibrate cmd gen	--	--	~~0.228 mV~~	✓
5.10.2.1	Input bus current	S26-1, S27-2 (S27-4 for redundant)		0.228 mV.	0.228 mV.
5.10.2.2	MUX output voltage	S26-3, S27-1	30.0 ±0.90V	29.67V.	29.83 V.
5.10.2.3	MUX load current	S26-3, S27-12	3.55 ±0.40A	31.94 mV.	32.12 mV.

The rest of Section 5.10.2 requires only checking voltage - indicate by checkmarks.

5.10.2.4.1	B1 + output voltage	S26-1, S27-5	✓	✓
5.10.2.4.2	B1 -	S27-6	✓	✓
5.10.2.4.3	B1 -	S27-5	✓	✓
5.10.2.4.4	B1 +	S27-7	✓	✓
5.10.2.5.1	B2 +	S27-7	✓	✓
5.10.2.5.2	B2 -	S27-8	✓	✓
5.10.2.5.3	B2 -	S27-8	✓	✓
5.10.2.5.4	B2 +	S27-7	✓	✓
5.10.2.6.1	B3 +	S27-9	✓	✓
5.10.2.6.2	B3 -	S27-10	✓	✓
5.10.2.6.3	B3 -	S27-10	✓	✓
5.10.2.6.4	B3 +	S27-9	✓	✓
5.10.2.7.1	B4 +	S27-11	✓	✓
5.10.2.7.2	B4 -	S27-12	✓	✓
5.10.2.7.3	B4 -	S27-12	✓	✓
5.10.2.7.4	B4 +	S26-1, S27-11	✓	✓
5.10.2.8.1	B5,7+	S26-2, S27-1	✓	✓
5.10.2.8.2	B5,7-	S27-2	✓	✓
5.10.2.8.3	B5,7-	S27-2	✓	✓
5.10.2.8.4	B5,7+	S27-1	✓	✓
5.10.2.9.1	B6 +	S27-3	✓	✓
5.10.2.9.2	B6 - output voltage	S26-2, S27-4	✓	✓

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.2.9.3	B6 - output voltage	S26-2, S27-4		✓	✓
5.10.2.9.4	B6 + output voltage	S26-2, S27-3		✓	✓
5.10.2.10.1	SMA ECR + output voltage	S27-5		✓	✓
5.10.2.10.2	-	S27-6		✓	✓
5.10.2.10.3	-	S27-6		✓	✓
5.10.2.10.4	-	S27-5		✓	✓
5.10.2.11.1	-7V	S26-2, S27-7		✓	
5.10.2.11.2	-7V	(S27-8 for RDT)			✓
5.10.2.12.1	-29V	S26-2, S27-9		✓	
		(S27-11 for RDT)			✓
5.10.2.12.2	-29V	S26-2, S27-10		✓	
		(S27-12 for RDT)			✓
5.10.2.12.3	-29V	S26-2, S27-10		✓	✓
5.10.2.12.4	SMA ECR -29V	S26-2, S27-9		✓	✓
5.10.2.13.1	Radiometer	S26-3, S27-2		✓	✓
5.10.2.13.2	Radiometer	S27-2		✓	✓
5.10.2.14.1	CDVU	S27-3		✓	✓
5.10.2.14.2	CDVU	S27-3		✓	✓
5.10.2.15.1	Analog +	S27-4		✓	✓
5.10.2.15.2	Analog -	S27-5		✓	✓
5.10.2.15.3	Analog -	S27-5		✓	✓
5.10.2.15.4	Analog +	S27-4		✓	✓
5.10.2.16.1	Electromech.	S27-6		✓	✓
5.10.2.16.2	Electromech.	S27-6		✓	✓
5.10.2.17.1	Outgas output voltage	S26-3, S27-7		✓	✓
5.10.3.1	Bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.0 V	(49) 28.01 V.
5.10.3.2	MUX load current	S26-3, S27-12	4.130 ±0.025A	41.31 mV.	41.42 mV.
5.10.3.3	Bus current	S26-1, S27-2 (S27-4 for RDT)		131.08 mV	(50) 131.73 mV.
5.10.3.3.2	BPS Voltage	S26-1, S27-1 S27-3)		28.00 V	28.01 V.
5.10.3.3.3	BPS Current	S26-1, S27-2 (S27-4)		130.99 mV	131.69 mV.
5.10.3.3.4	MUX Current	S26-3, S27-12		41.29 mV	41.41 mV

SCN-1

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.3.4.1	B1 + output voltage	S26-1, S27-5	20.50 ±2.50V	20.58 V. (1)	20.71 V.
5.10.3.4.2	B1 + output ripple	Look on Scope	<600 mV pk-pk	30 mV	25 mV.
5.10.3.4.3	B1 - output voltage	S26-1, S27-6	-20.50 ±2.50V	-20.59 V (2)	-20.73 V.
5.10.3.4.4	B1 - output ripple	Look on Scope	<600 mV pk-pk	30 mV	25 mV
5.10.3.5.1	B2 + output voltage	S26-1, S27-7	20.50 ±2.50V	20.43 V (3)	20.57 V.
5.10.3.5.2	B2 + output ripple	Look on Scope	<600 mV pk-pk	25 mV	15 mV.
5.10.3.5.3	B2 - output voltage	S26-1, S27-8	-20.50 ±2.50V	-20.86 V (4)	-20.59 V.
5.10.3.5.4	B2 - output ripple	Seen on Scope	<600 mV pk-pk	25 mV	20 mV
5.10.3.6.1	B3 + output voltage	S26-1, S27-9	20.50 ±2.50V	20.51 V (5)	20.51 V.
5.10.3.6.2	B3 + output ripple	Seen on Scope	<600 mV pk-pk	30 mV	20 mV.
5.10.3.6.3	B3 - output voltage	S26-1, S27-10	-20.50 ±2.50V	-20.45 V (6)	-20.60 V.
5.10.3.6.4	B3 - output ripple	Seen on Scope	<600 mV pk-pk	25 mV	20 mV.
5.10.3.7.1	B4 + output voltage	S26-1, S27-11	20.50 ±2.50V	20.55 V (7)	20.71 V.
5.10.3.7.2	B4 + output ripple	Seen on Scope	<600 mV pk-pk	25 mV	15 mV
5.10.3.7.3	B4 - output voltage	S26-1, S27-12	-20.50 ±2.50V	-20.57 V (8)	-20.73 V.
5.10.3.7.4	B4 - output ripple	Seen on Scope	<600 mV pk-pk	25 mV	20 mV
5.10.3.8.1	B5,7 + voltage	S26-2, S27-1	20.50 ±2.50V	20.27 V (9)	20.20 V.
5.10.3.8.2	B5,7 + ripple	Seen on Scope	<600 mV pk-pk	30 mV	35 mV
5.10.3.8.3	B5,7 - voltage	S26-3, S27-2	-20.50 ±2.50V	-20.26 V (10)	-20.23 V.
5.10.3.8.4	B5,7 - ripple	Seen on Scope	<600 mV pk-pk	35 mV	40 mV.
5.10.3.9.1	B6 + voltage	S26-2, S27-3	20.50 ±2.50V	20.48 V (11)	20.55 V.
5.10.3.9.2	B6 + ripple	Seen on Scope	<600 mV pk-pk	25 mV	15 mV
5.10.3.9.3	B6 - voltage	S26-2, S27-4	-20.50 ±2.50V	-20.46 V (12)	-20.58 V.
5.10.3.9.4	B6 - ripple	Seen on Scope	<600 mV pk-pk	30 mV	15 mV
5.10.3.10.1	SMA Htr + voltage	S26-2, S27-5	21.20 ±2.12V	22.32 V (13)	22.48 V.
5.10.3.10.2	SMA Htr + ripple	Seen on Scope	<630 mV pk-pk	30 mV	15 mV
5.10.3.10.3	SMA Htr - voltage	S26-2, S27-6	-21.20 ±2.12V	-22.79 V (14)	-22.94 V.
5.10.3.10.4	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	30 mV	20 mV
5.10.3.11.1	SMA +7V voltage	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	7.716 V (15)	7.808 V.
5.10.3.11.2	SMA +7V output ripple	Seen on Scope	<210 mV pk-pk	40 mV	35 mV

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.3.12.1	SMA +29V output voltage	S26-2, S27-9 (S27-11 for RDT)	29.50 ±1.50V	30.48V (16)	30.68V
5.10.3.12.2	SMA +29V ripple	Seen on Scope	<870 mV, pk-pk	50 mV	50 mV
5.10.3.12.3	SMA -29V voltage	S26-2, S27-10 (S27-12 for RDT)	-29.50 ±1.50V	-30.47 (17)	-30.69 V.
5.10.3.12.4	SMA -29V ripple	Seen on Scope	<870 mV pk-pk	50 mV	40 mV.
5.10.3.13.1	MUX voltage	S26-3, S27-1	30.00 ±0.90V	30.24V (18)	30.19 V.
5.10.3.13.2	MUX ripple	Seen on Scope	<900 mV, pk-pk	50 mV	60 mV
5.10.3.14.1	Radiometer voltage	S26-3, S27-2	8.50 ±0.85V	8.581 V (19)	8.557 V.
5.10.3.14.2	Radiometer ripple	Seen on Scope	<250 mV pk-pk	30 mV	30 mV.
5.10.3.15.1	CDVU voltage	S26-3, S27-3	8.00 ±0.80V	7.577 V (20)	7.718 V.
5.10.3.15.2	CDVU ripple	Seen on Scope	<240 mV pk-pk	25 mV	25 mV.
5.10.3.16.1	Analog + voltage	S26-3, S27-4	21.20 ±2.12V	22.65 V (21)	22.53 V.
5.10.3.16.2	Analog + ripple	Seen on Scope	<630 mV pk-pk	30 mV	30 mV.
5.10.3.16.3	Analog - voltage	S26-3, S27-5	-21.20 ±2.12V	-22.51 V (22)	-22.59 V.
5.10.3.16.4	Analog - ripple	Seen on Scope	<630 mV pk-pk	30 mV	25 mV.
5.10.3.17.1	Electromech. voltage	S26-3, S27-6	33.40 ±3.34V	33.13 V (23)	33.40 V.
5.10.3.17.2	Electromech. ripple	Seen on Scope	<1.0V pk-pk	40 mV	50 mV.
5.10.3.18.1	Outgas voltage	S26-3, S27-7	100.0 ±12.0V	104.59 V	103.01 V.
5.10.3.18.2	Outgas output ripple	Seen on Scope	<3.0V pk-pk	150 mV	150 mV.
5.10.4.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		3.806 V	3.826 V.
5.10.4.2.1	Band 1 + volt. telemetry	S26-4, S28-5		3.760	3.795
5.10.4.2.2	Band 1 -	S28-6		3.750	3.775
5.10.4.3.1	Band 2+	S28-7		3.719	3.757
5.10.4.3.2	Band 2-	S28-8		3.709	3.732
5.10.4.4.1	Band 3+	S28-9		3.733	3.758
5.10.4.4.2	Band 3-	S28-10		3.732	3.758
5.10.4.5.1	Band 4+	S28-11		3.734	3.769
5.10.4.5.2	Band 4-	S26-4, S28-12		3.744	3.774
5.10.4.6.1	Band 5,7+	S26-5, S28-1		3.700	3.708
5.10.4.6.2	Band 5,7- volt. telemetry	S26-5, S28-2		3.695	3.688

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.4.7.1	Band 6 + volt. telemtry	S26-5, S28-3		3.701 V.	3.726 V.
5.10.4.7.2	Band 6 -	S28-4		3.737	3.760
5.10.4.8.1	SMA Htr +	S28-5		4.077	4.112
5.10.4.8.2	SMA Htr -	S28-6		4.132	4.158
5.10.4.9	SMA +7V	S26-5, S27-7 (S27-8 for RDT)		4.919	4.999
5.10.4.10.1	SMA +29V	S26-5, S28-9 (S27-11 for RDT)		4.180	4.235
5.10.4.10.2	SMA -29V	S26-5, S28-10 (S27-12 for RDT)		3.781	3.857
5.10.4.11	MUX	S26-6, S28-1		4.306	4.303
5.10.4.12	Radiometer	S26-6, S28-2		4.709	4.700
5.10.4.13	CDVU	S26-6, S28-3		4.259	4.334
5.10.4.14.1	Analog + volt. telemtry	S26-6, S28-4		4.014	4.031
5.10.4.14.2	Analog -	S26-6, S28-5		3.947	3.962
.10.4.15	Electromech.	S28-6		4.069	4.103
5.10.4.16	Outgas volt. telemetry	S26-6, S28-7		5.230	5.154
5.10.5.1.1	Analog + load current	S26-3, S27-11 mV ÷ 10 = Amps		15.604 =V (25)	15.617 =V
5.10.5.1.2	MUX	S26-3, S27-12 mV ÷ 10 = Amps		41.29 =V (25)	41.42 =V
5.10.5.1.3	Band 1 +	S26-7, S34-1 mV ÷ 0.5 = mA		91.58 =V (26)	92.17 =V
5.10.5.1.4	Band 1 -	S34-2		-91.75 (27)	-92.39
5.10.5.1.5	2 +	S34-3		90.65 (28)	91.34
5.10.5.1.6	2 -	S34-4		-91.49 (29)	-92.12
5.10.5.1.7	3 +	S34-5		91.40 (30)	91.44
5.10.5.1.8	3 -	S34-6		-91.21 (31)	-91.83
5.10.5.1.9	4 +	S34-7		91.43 (32)	92.21
5.10.5.1.10	4 -	S34-8		-91.11 (33)	-91.82
5.10.5.1.11	5,7 +	S34-9		91.19 (34)	90.99
5.10.5.1.12	5,7 -	S34-10		-90.36 (35)	-90.22
5.10.5.1.13	6 +	S34-11		47.57 (36)	47.91
5.10.5.1.14	Band 6 -	S26-7, S34-12		-47.40 (37)	-47.70
5.10.5.1.15	SMA Htr +	S26-8, S34-1 mV ÷ 0.5 = mA		48.12 (38)	48.43
5.10.5.1.16	SMA Htr - load current	S26-8, S34-2 mV = mA		-9.005 (39)	-9.061

10.4 Performance test (continued)

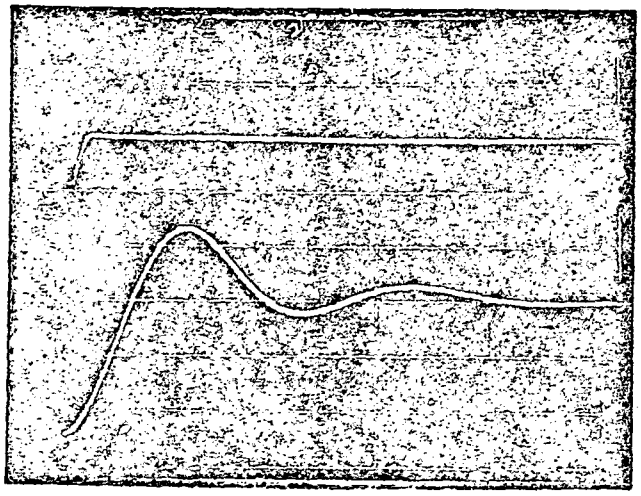
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.5.1.17	SMA +29V load current	S26-8, S34-3	mV ÷ 0.402 = mA	50.97 mV (40)	51.32 mV.
5.10.5.1.18	SMA -29V	S34-4	mV ÷ 0.402 = mA	-50.73 mV (41)	-51.10 mV.
5.10.5.1.19	SMA +7V	S34-5	V ÷ 0.1 = Amps	.2798 V. (42)	.2834 V.
5.10.5.1.20	Analog -	S34-6	mV ÷ 0.402 = mA	-.2700 V (43)	-.2710 V.
5.10.5.1.21	Radiometer	S34-9	mV ÷ 0.5 = mA	153.66 mV. (44)	153.35 mV.
5.10.5.1.22	CDVU	S34-10	mV ÷ 0.5 = mA	.2710 V. (45)	.2760 V.
5.10.5.1.23	Electromech. load current	S26-8, S34-11	mV ÷ 0.402 = mA	.2109 V. (46)	.2127 V.
5.10.5.2.1	Bus power supply voltage	S26-1, S27-1 (S27-3 for RDT)		28.00 V. (47)	28.01 V.
5.10.5.2.2	Bus input current	S26-1, S27-2 (S27-4 for RDT)	mV ÷ 10 = Amps	131.27 mV (48)	131.97 mV.
5.10.5.2.3	P_{IN} (Section 5.10.5)			367.556	369.647
5.10.5.2.4	P_{IN} (Section 5.10.3)			367.024	368.975
5.10.5.2.5	P_{IN} (avg)			367.29	369.312
5.10.5.2.9	Input current at current limit		26-1, 27-2 (26-1 27-4 Rdt) -	159.6 mV.	172.0 mV.
	Input voltage at current limit		27-1 (27-3 Rdt)	27.72 V.	27.61 V.
	MUX voltage at current limit		26-3, 27-1	30.28 V.	30.46 V.
	MUX current at current limit		27-12	54.07 mV.	50.38 mV.
5.10.5.3.1	P_{OUT}			271.545	274.579
5.10.5.3.2	Efficiency		≥ 70%	74.43	74.84

INPUT POWER #2= 367 556
INPUT POWER #1= 367 024
AVE INPUT POWER= 367 29
OUTPUT POWER= 271 545
EFFICIENCY = 74 43
INPUT POWER #2= 369 647
INPUT POWER #1= 368 975
AVE INPUT POWER= 369 312
OUTPUT POWER= 274 579
EFFICIENCY = 74 84

10.4 Performance test (continued)

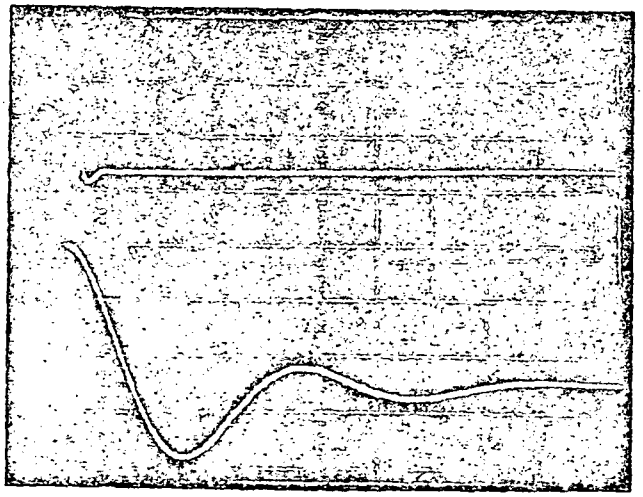
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.6.1	+7V output pulsed	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	7.036 V.	7.185 V.

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-PRIMARY SIDE



(0.2A) CURRENT/DIV: 0.2 Amp/Div A.C.
(1V) VOLTAGE/DIV: 1V/Div.
(200uS) SWEEP RATE: 500μ sec.

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load on SMA +7V outputs is being removed - PRIMARY SIDE

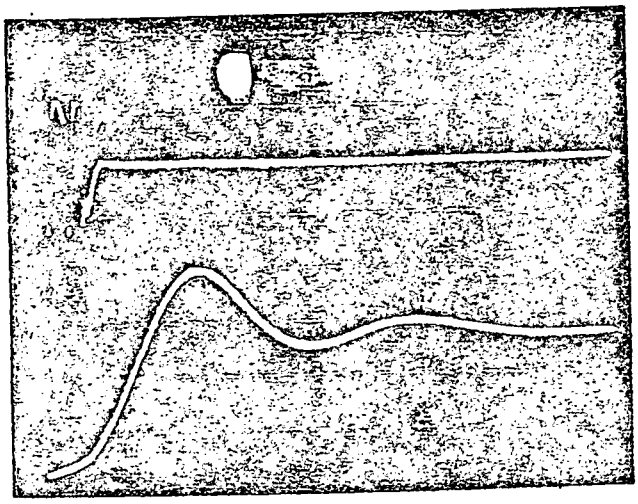


(0.2A) CURRENT/DIV: 0.2 A. A.C.
(1V) VOLTAGE/DIV: 1 V
(200uS) SWEEP RATE: 500μ sec.

10.4 Performance test (continued)

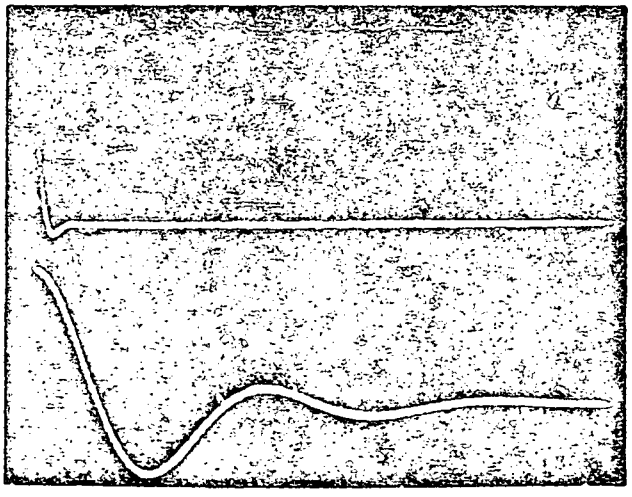
REF. PARA. DESCRIPTION

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-REDUNDANT SIDE



(0.2A) CURRENT/DIV: .2A. A.C.
(1V) VOLTAGE/DIV: 1 V
(200uS) SWEEP RATE: 500 μ sec.

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load is being removed-REDUNDANT SIDE



(0.2A) CURRENT/DIV: .2A A.C.
(1V) VOLTAGE/DIV: 1 V
(200uS) SWEEP RATE: 500 μ sec.

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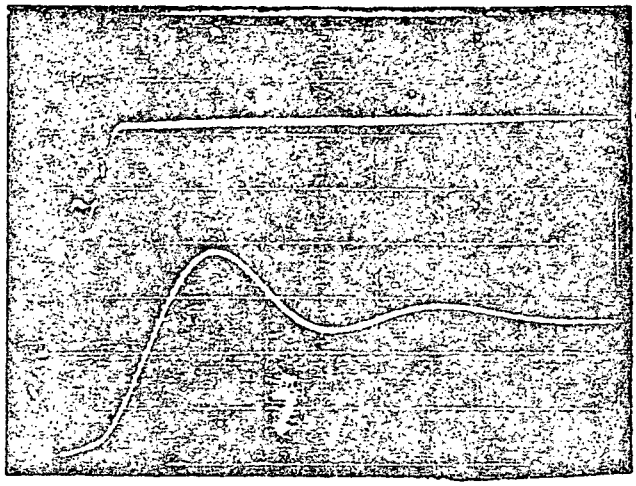
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.6.3	Input bus current	S26-1, S27-2 (S27-4 for RDT)		137.26 mV.	144.2 mV.
5.10.6.4	SMA +7V TM- pulsed	S26-5, S28-7 (S28-8 for RDT)		4.572 V.	4707 V.
5.10.6.5	SMA +7V load current-pulsed	(S26-8, S34-5		461.6 mV.	473.5 mV.

5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as SMA +7V output is being pulse-loaded-PRIMARY SIDE

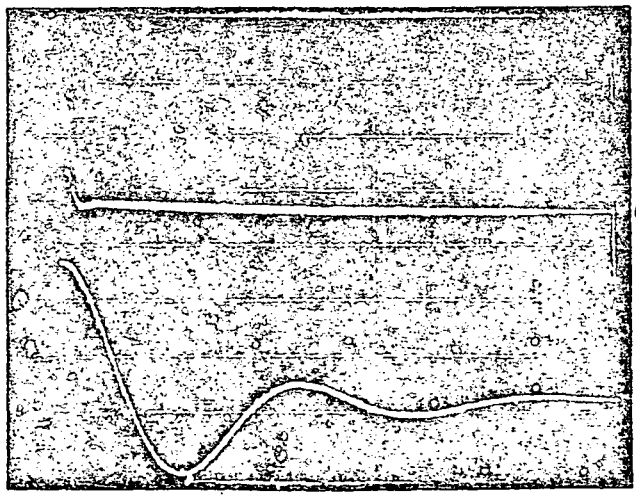


(1A)* SMA CURRENT/DIV: 0.1 V/D
(NA) BUS CURRENT/DIV: 200 mA.
(200uS) SWEEP RATE: 500 μsec.
* Using 0.1Ω shunt and 100 mV/Div on scope

Sect 2

SMA Current

5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as pulse-load is being removed-PRIMARY SIDE



(1A)* SMA CURRENT/DIV: 0.1 V/D
(NA) BUS CURRENT/DIV: 200 mA
(200uS) SWEEP RATE: 500 μsec
*Using 0.1Ω shunt and 100mV/Div on Scope

Sect 2

SMA Current

C-4

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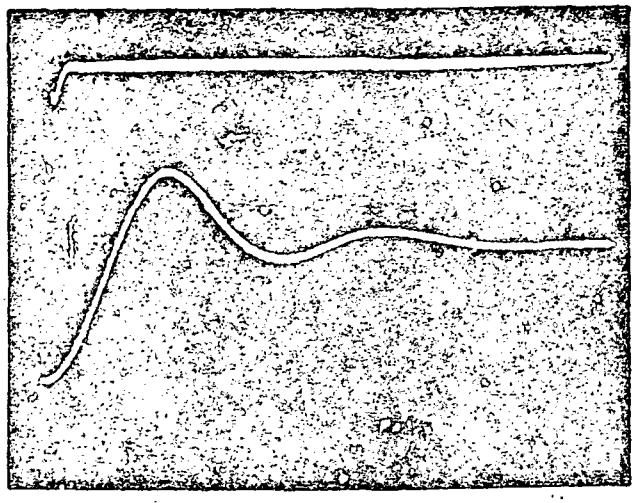
10.4 Performance test (continued)

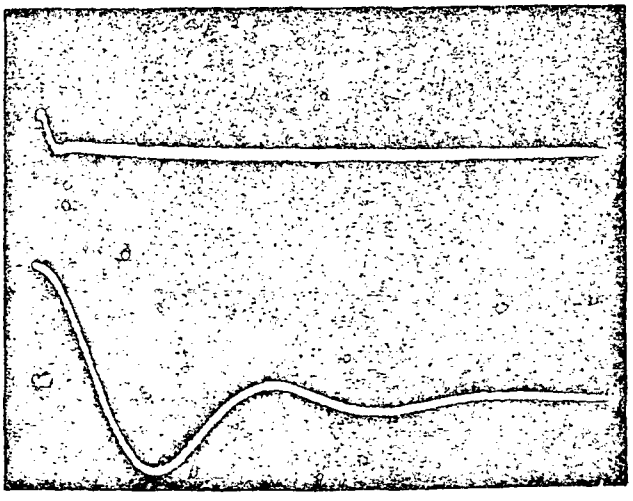
REF. PARA.	DESCRIPTION
5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as SMA + 7V output is being pulse loaded - REDUNDANT SIDE



(1A)* SMA CURRENT/DIV: 0.1 V
(2A) BUS CURRENT/DIV: 0.2 A
(200uS) SWEEP RATE: 500 μsec.

*Using 0.1 Ω shunt and 100 mV/Div on scope.

REF. PARA.	DESCRIPTION
5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as pulse-load is removed - REDUNDANT SIDE

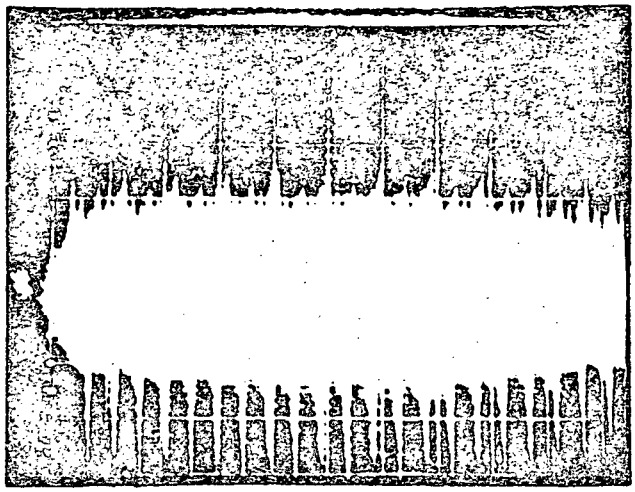


(1A)* SMA CURRENT/DIV: 0.1 V
(2A) BUS CURRENT/DIV: 0.2 A
(200uS) SWEEP RATE: 500 μsec.

*Using 0.1 Ω shunt and 100mV/Div on scope.

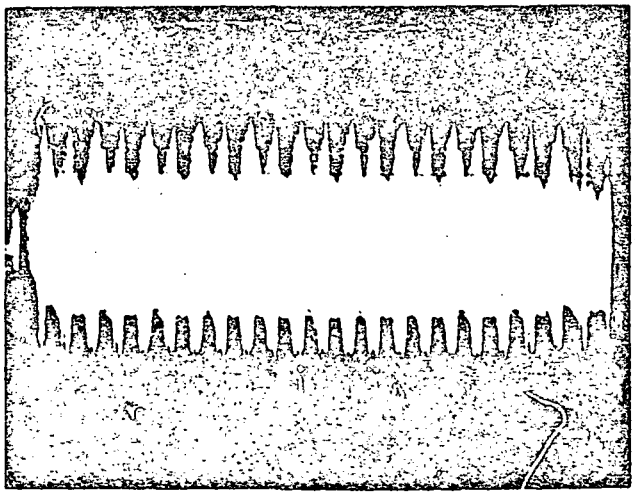
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION
5.10.7.1	Photograph of reflected input current ripple - PRIMARY SIDE



(1mA) CURRENT/DIV: 2mA. A.C.
(10uS) SWEEP RATE: 10μsec.

5.10.7.1 Photograph of reflected input current ripple - REDUNDANT SIDE

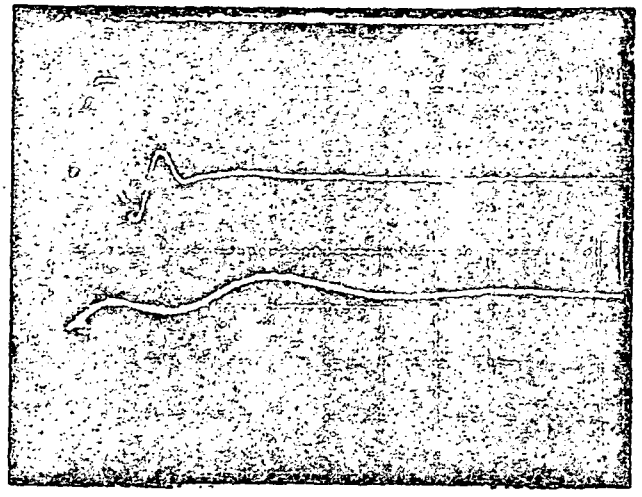


(1mA) CURRENT/DIV: 2mA. A.C.
(10uS) SWEEP RATE: 10μsec.

..1 Input current - full load S26-1, S27-2 (S27-4 for RDT) 131.68 mA, 35.81 mV.

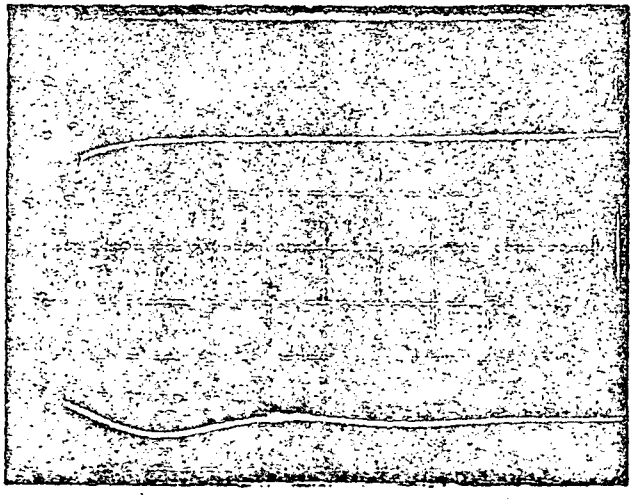
8.1.2 Input current w/o analog load Same 104.05 mV. 108.81 mV.

10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 2 V
(1A) CURRENT/DIV: 2 Amp.
(500uS) SWEEP RATE: 500 μsec.

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is disabled - PRIMARY SIDE

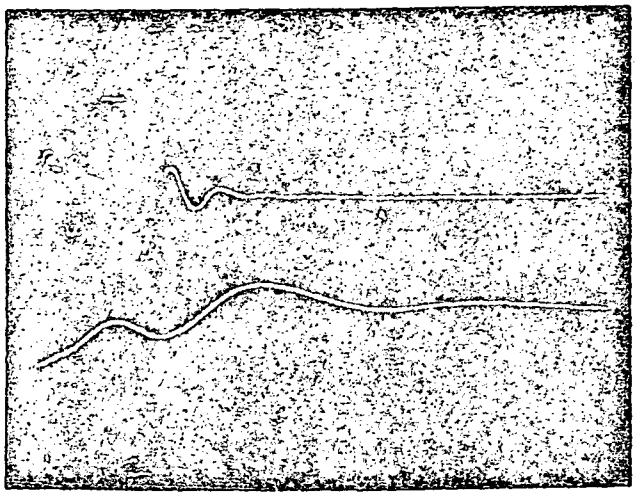


(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 2 Amp.
(1mS) SWEEP RATE: 500 μsec.

10.4 Performance test (continued)

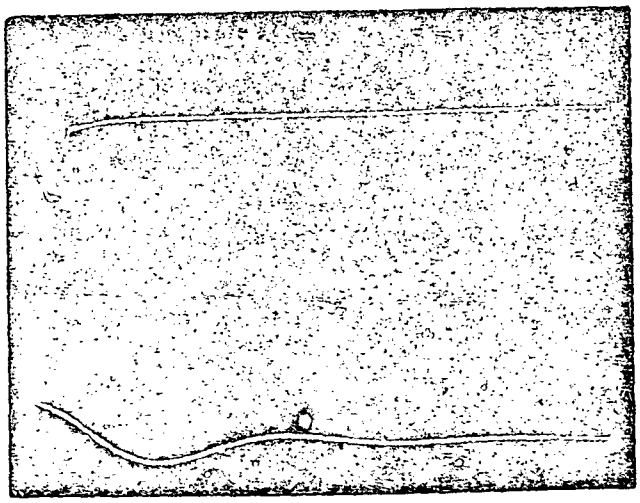
REF. PARA.	DESCRIPTION

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is enabled - REDUNDANT SIDE.



(2V) VOLTAGE/DIV: 2V.
(1A) CURRENT/DIV: 2A.
(500uS) SWEEP RATE: 50

5.10.8.1.3 Photograph of transients induced on input bus current and analog - output voltage as analog output is disabled - REDUNDANT SIDE.

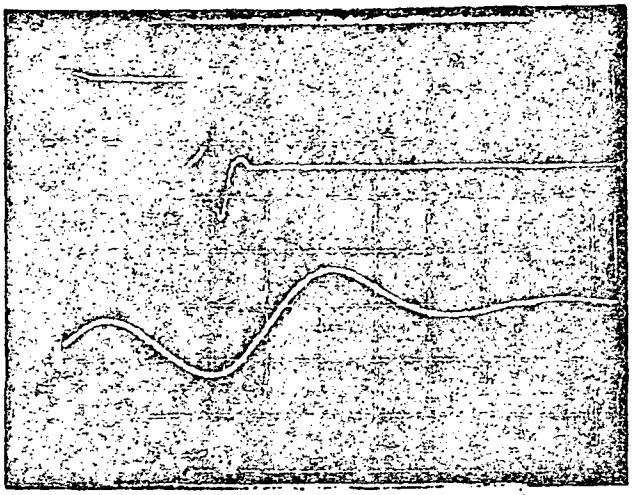


(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(1mS) SWEEP RATE: 500μsec

10.4 Performance test (continued)

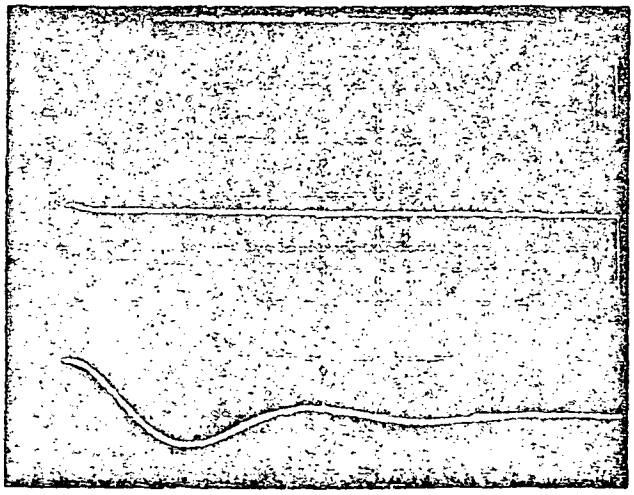
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.2.1	Input bus current w/o SMA +7V load	S26-1, S27-2 (S27-4 for RDT)		120.22 V.	124.20 V.

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is enabled - PRIMARY SIDE.



(5V) VOLTAGE/DIV: 2V.
(1A) CURRENT/DIV: 1 Amp.
(200uS) SWEEP RATE: 500 μsec.

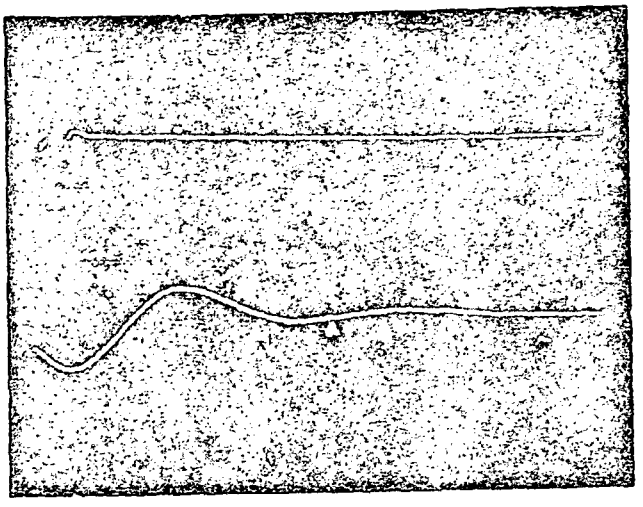
5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - PRIMARY SIDE.



(2V) VOLTAGE/DIV: 2V.
(1A) CURRENT/DIV: 1 Amp.
(2mS) SWEEP RATE: 500 μsec.

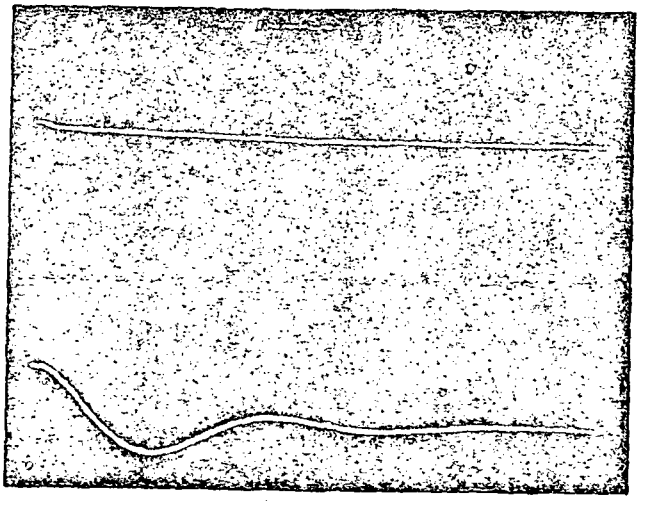
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION
10.8.2.2	Photograph of transients induced on input bus current and SMA +7 output voltage as SMA +7V is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 2 V.
(1A) CURRENT/DIV: 1 Amp.
(200uS) SWEEP RATE: 500 μsec.

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - REDUNDANT SIDE



V) VOLTAGE/DIV: 2 V.
A) CURRENT/DIV: 1 Amp.
mS) SWEEP RATE: 500 μsec.

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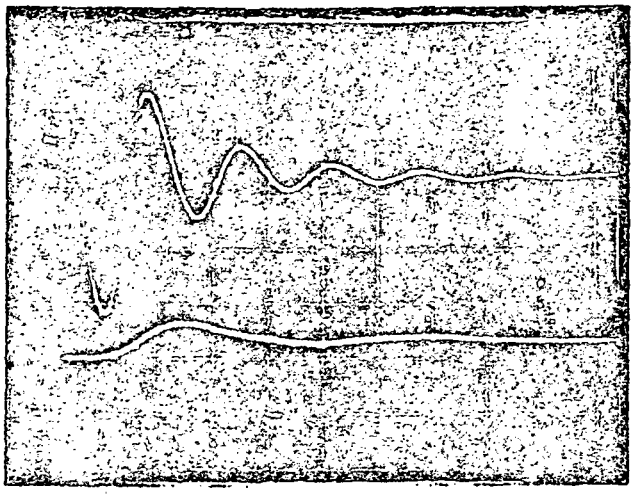
10.4 Performance test (continued)

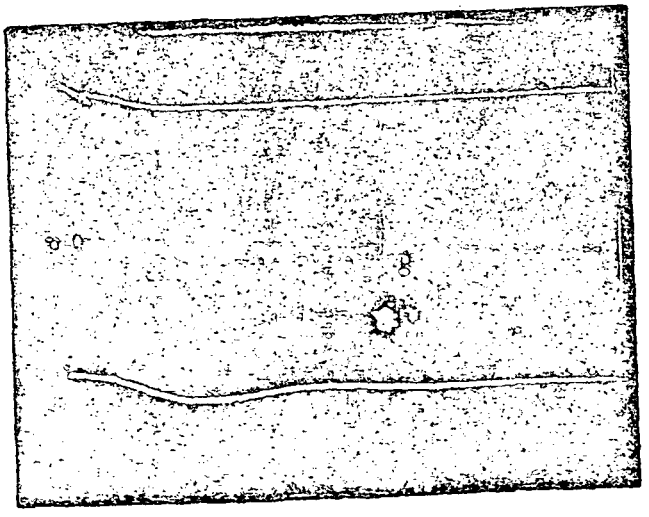
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDAN
5.10.8.2.3	Input bus current w/o SMA ±29V load	S26-1, S27-2 (S27-4 for RDT)		127.70 mV.	132.0 mV.

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1V.
(0.5V) CURRENT/DIV: 0.5 Amps
(1mS) SWEEP RATE: 500 μsec.

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1V.
(0.5A) CURRENT/DIV: 0.5 Amps
(1mS) SWEEP RATE: 500 μsec.

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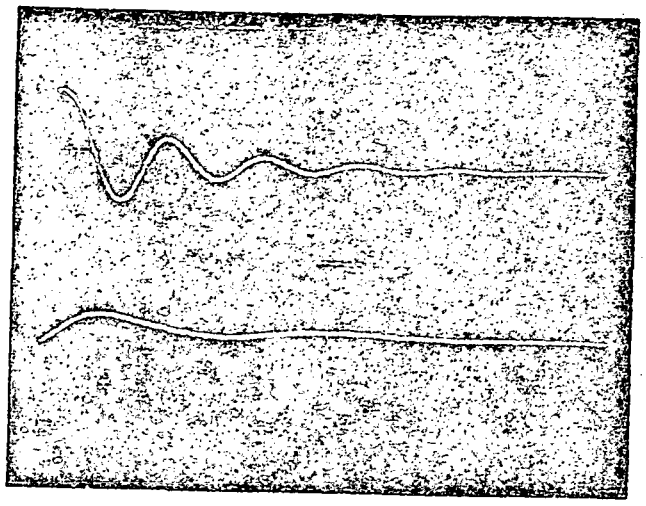
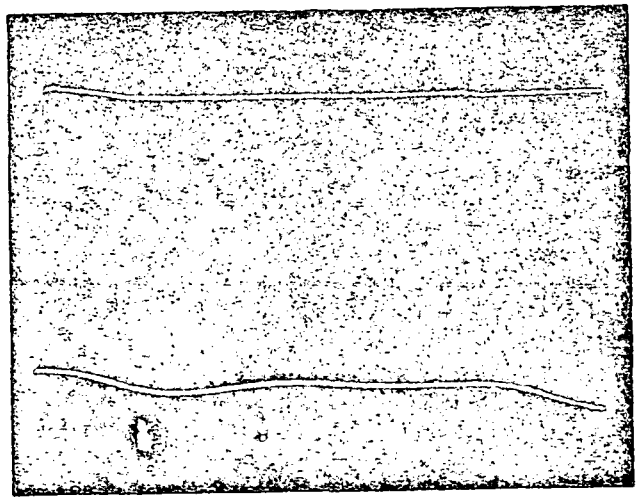
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION
5.10.8.2.4	Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: 0.5Amps.
(1mS) SWEEP RATE: 500μsec.

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as ±29V is disabled - REDUNDANT SIDE

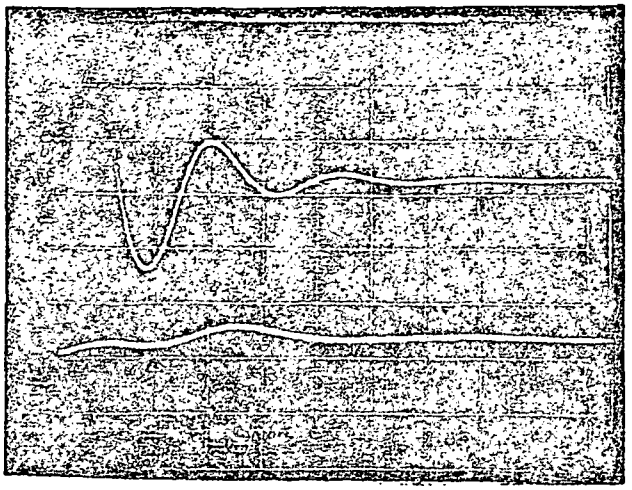


(2V) VOLTAGE/DIV: 1V.
(0.5) CURRENT/DIV: 0.5Amps
(1mS) SWEEP RATE: 500μsec.

10.4 Performance test (continued)

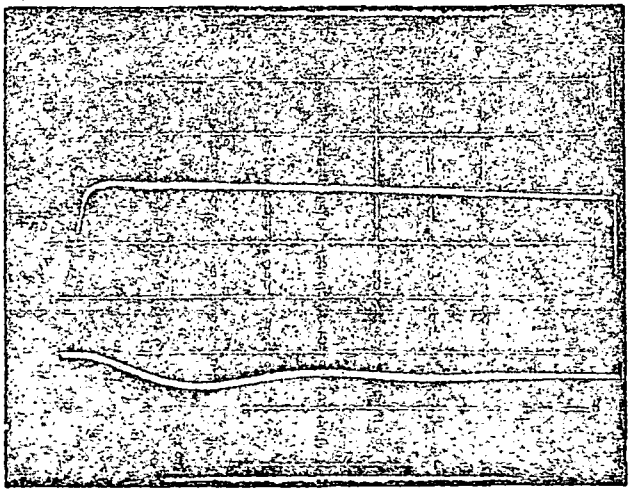
EF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDAN
5.10.8.3.1	Input bus current w/o CDVU load	S26-1, S27-2 (S27-4 for RDT)		129.48 mV.	133.31 mV

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1 V.
(0.5A) CURRENT/DIV: 0.5 Amps.
(1mS) SWEEP RATE: 500 μsec.

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1V
(0.5V) CURRENT/DIV: 0.5 Amps.
(1mS) SWEEP RATE: 500 μsec.

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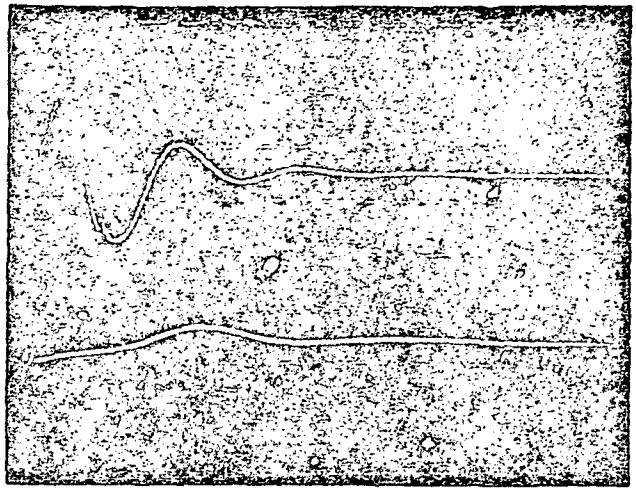
10.4 Performance test (continued)

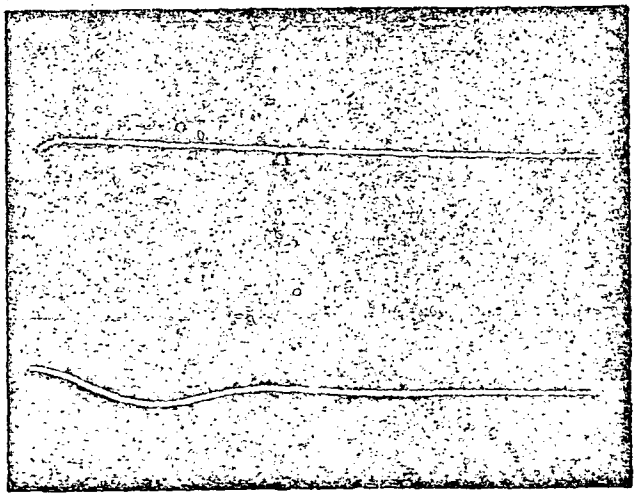
REF. PARA. DESCRIPTION

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V.
(0.5A) CURRENT/DIV: 0.5 Amps.
(1mS) SWEEP RATE: 500 μsec.

5.10.8.3.2 Photograph as transients induced on input bus current and CDVU output voltage as CDVU is disabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: 0.5 Amps.
(1mS) SWEEP RATE: 500 μsec.

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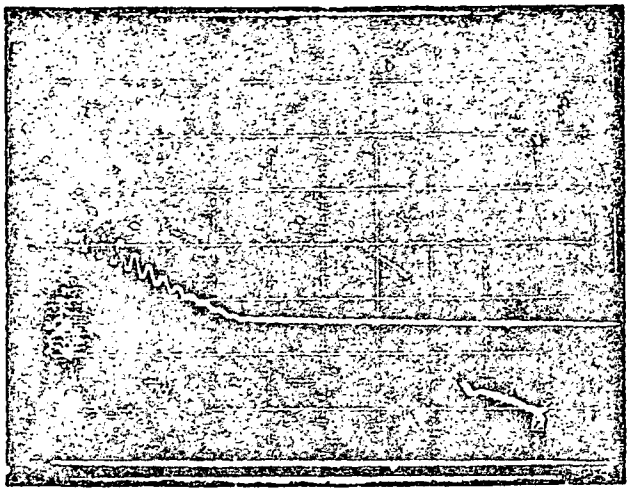
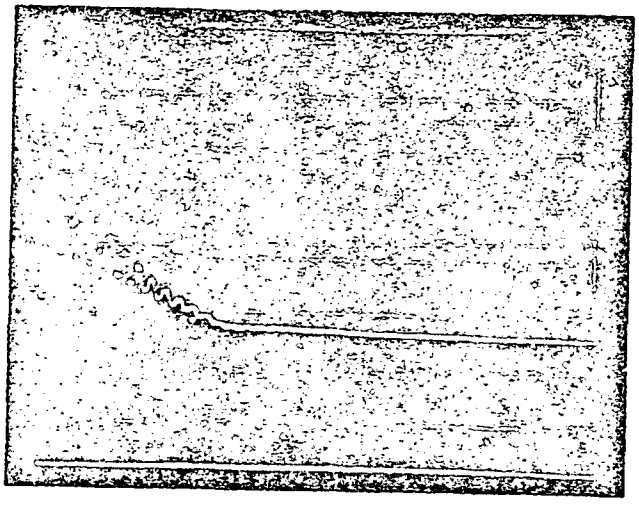
10.4 Performance test (continued)

F. PARA.	DESCRIPTION
5.10.9.1	Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(500uS) SWEEP RATE: 500μsec.

Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - REDUNDANT SIDE

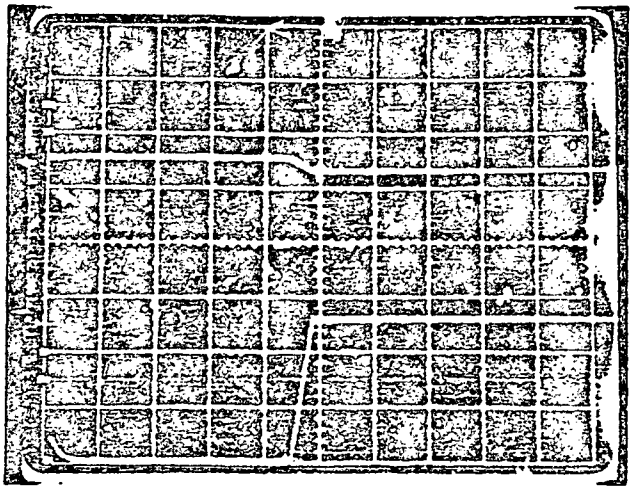


(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(500uS) SWEEP RATE: 500μsec.

10.4 Performance test (continued)

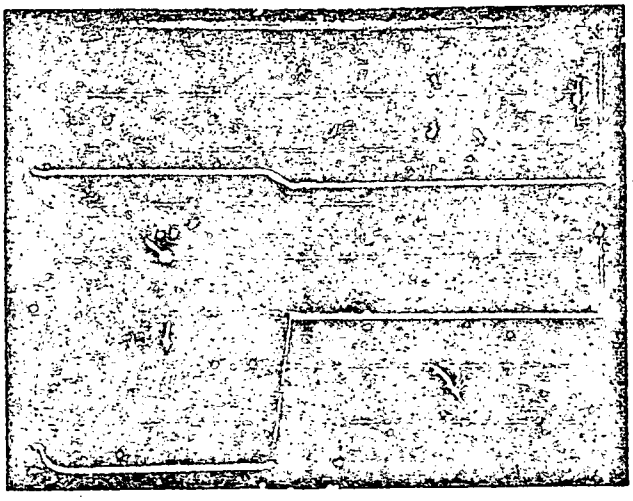
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.9.2	UUT stays off when bus is reapplied.	S1-ON (S2-ON for RDT)	--	✓	✓

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V.
(5A) CURRENT/DIV: 5 Amps.
(100mS) SWEEP RATE: 100 μsec.

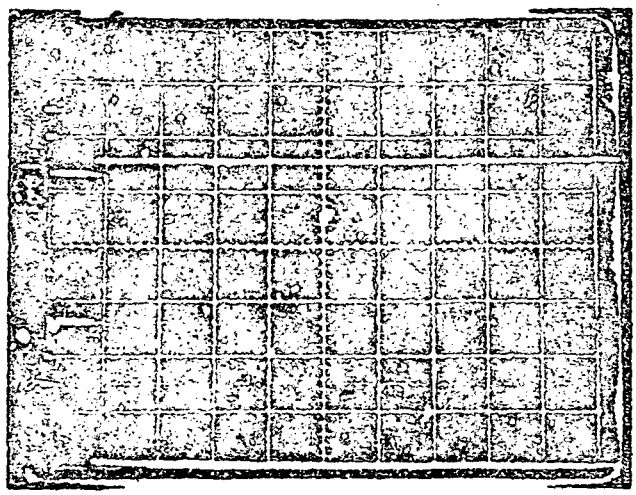
5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5 Amps.
(100mS) SWEEP RATE: 100 μsec

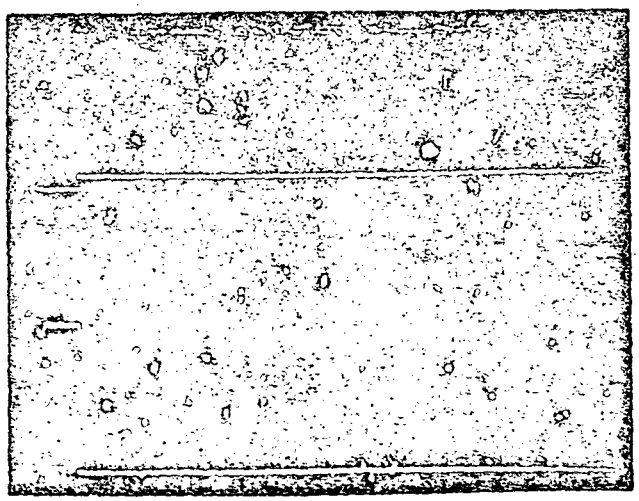
10.4 Performance test (continued)

TP. PARA.	DESCRIPTION
5.10.9.4	Photograph of turn-off transient of input bus voltage and current as OFF command is issued - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V.
(5A) CURRENT/DIV: 5 Amps.
(10mS) SWEEP RATE: 10 m sec.

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5 Amps
(10mS) SWEEP RATE: 10 m sec.

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	EVM SWITCH POSITIONS	LIMITS	PRIMARY	REDUNDANT
5.10.9.5	Record	S27-2 (S27-4)		127.31 mV.	131.77 mV.
5.10.9.6	Record	(S27-4 (S27-2)		2.483 V.	12.92
	Record	S27-2 (S27-4)		126.09 mV.	107.54
5.10.9.7	Record that UUT turns on.	(Checkmark)		✓	✓
5.10.10.1	Input bus current AFTER it reads ~ 17A AND input bus voltage reads ~ 21V.	S26-1, S27-2 (S27-4 for RDT)		15 0.86 mV.	150.73 mV.
5.10.10.2	Input bus voltage with 17.0A load	S26-1, S27-1 (S27-3 for RDT)		28.00 V.	28.00 V.
5.10.10.3	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		+.332 V.	4.477 V.
5.10.10.4	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.501	3.511 V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.02	28.01
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		124.47 mV.	122.31 mV.
5.10.10.5	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.018 V.	3.002 V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.01 V.	28.04 V.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		110.44 mV.	105.31 mV.
5.10.10.6	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.503 V.	2.504 V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.01 V.	28.02 V.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		93.00 mV.	91.70 mV.
5.10.10.7	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.014 V.	2.005 V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.01 V.	28.03 V.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		78.26 mV.	74.30 mV.

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.10.8	Input current telemetry output	S26-4, S28-2 (S26-4 for RDT)		1.5006 V.	1.5074 V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.04 V.	29.00 V.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		62.18 mA.	58.80 mA.
5.10.10.9	Input current telemetry output	S26-4, S28-2 (S26-4 for RDT)		1.0064 V.	1.0020 V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.00 V.	28.00 V.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		48.61 mA.	39.86 mA.
5.10.10.10	Input current telemetry output	S26-4, S28-2 (S26-4 for RDT)		.5049 V.	.4999 V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.00 V.	28.00 V.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		30.18 mA.	28.2 mA. 28.84 mA.
5.10.10.11	Input current telemetry output	S26-4, S28-2 (S26-4 for RDT)		.2116 V.	.2001 V.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.00 V.	27.9 V.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		32.32 mV.	20.74 mV.
5.10.10.12	Input current telemetry output	S26-4, S28-2 (S26-4 for RDT)		6.3 mA.	42.5 mA.
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.00 V.	28.00 V.
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		11.521 mV.	14.391 mV.
5.10.11.1	Band 1+ output voltage	S26-1, S27-5		23.56 V.	24.25 V.
5.10.11.2	Band 1- output voltage	S27-6		-23.76	-23.73
5.10.11.3	2+	S27-7		24.12	23.61
5.10.11.4	2-	S27-8		-24.13	-24.00
5.10.11.5	3+	S27-9		25.39	24.3
5.10.11.6	3-	S27-10		-23.77	-23.78
5.10.11.7	Band 4+ output voltage	S26-1, S27-11		24.04	24.16

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.11.8	Band 4- output voltage	S26-1, S27-12		-23.70 V.	-23.89 V.
5.10.11.9	5,7+	S26-2, S27-1		23.20	23.63
5.10.11.10	5,7-	S27-2		-23.14	-23.45
5.10.11.11	6+	S27-3		22.88	23.32
5.10.11.12	Band 6-	S27-4		-23.38	-23.58
5.10.11.13	SMA Htr +	S27-5		24.66	25.46
5.10.11.14	Htr -	S27-6		-25.24	-25.42
5.10.11.15	+7V	S27-7		9.178	N/A
5.10.11	+7V	(S27-8 For RDT)		N/A	9.282 V.
5.10.11	+29V	S27-9		31.92 V.	N/A
5.10.11	+29V	(S27-11 For RDT)		N/A	31.97 V.
5.10.11	-29V	S27-10		-32.27 V.	N/A
	SMA -29V	S26-2, (S27-12 for RDT)		N/A	-32.77 V.
5.10.11.18	Radiometer	S26-3, S27-2		9.602 V.	9.721 V.
5.10.11.19	CDVU	S27-3		9.466	9.438
5.10.11.20	Analog +	S27-4		26.64	26.85
5.10.11.21	Analog -	S27-5		-25.94	-25.20
5.10.11.22	Electromech.	S27-6		41.70	41.60
5.10.11.23	Outgas	S27-7		102.58	103.73
5.10.11.24	Parasitic	S27-9		30.94	N/A
	Parasitic output voltage	S26-3, (S27-10 for RDT)		N/A	31.17 V.
5.10.11.25	Band 1+ TM output	S26-4, S28-5		4.298 V.	4.434 V.
5.10.11.26	1-	S28-6		4.310	4.315
5.10.11.27	2+	S28-7		4.389	4.299
5.10.11.28	2-	S28-8		4.368	4.356
5.10.11.29	3+	S28-9		4.617	4.390
5.10.11.30	3-	S28-10		4.257	4.332
5.10.11.31	4+	S28-11		4.363	4.395
5.10.11.32	4-	S26-4, S28-12		4.306	4.341
5.10.11.33	Band 5,7+ TM output	S26-5, S28-1		4.229	4.324

SCN 2

SCN 2

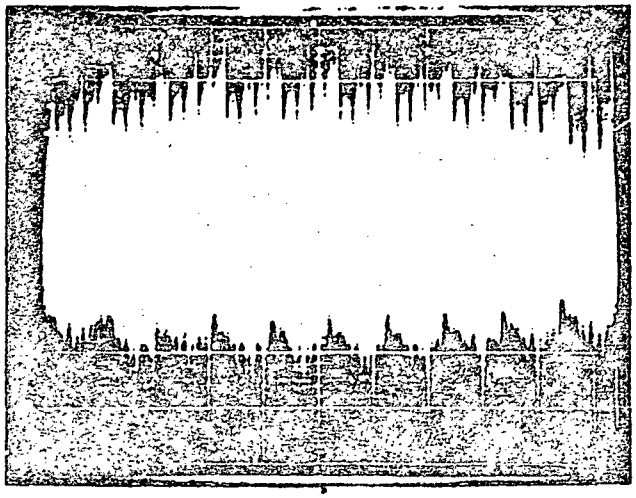
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.11.34	Band 5,7- TM output	S26-5, S28-2		4.216 V.	4.270 V.
5.10.11.35	6+	S28-3		4.135	4.220
5.10.11.36	Band 6-	S28-4		4.264	4.300
5.10.11.37	SMA Htr +	S28-5		4.500	4.699
5.10.11.38	Htr -	S28-6		4.560	4.57
5.10.11.39	+7V	S28-7 (S28-8 for RDT)		5.656	5.716
5.10.11.40	+29V	S28-9 (S28-11 for RDT)		4.351	4.385
5.10.11.41	SMA -29V	S26-5, S28-10 (S28-12 for RDT)		3.920 V.	3.889 V.
5.10.11.42	Radiometer	S26-6, S28-2		5.200 V.	5.269 V.
5.10.11.43	CDVU	S28-3		5.242	5.226
5.10.11.44	Analog +	S28-4		4.827	4.761
5.10.11.45	Analog -	S28-5		4.061	4.069
5.10.11.46	Electromech.	S28-6		5.096	5.088
5.10.11.47	Outgas - TM output	S26-6, S28-7		5.105	5.014
5.10.12.1	Bus voltage	S26-1, S27-1 (S27-3 for RDT)		28.00	28.01
5.10.12.2	Input bus current	S26-1, S27-2 (S27-4 for RDT)		42.53 mV.	45.38 mV.
5.10.12.3	SMA Htr + output voltage	S26-2, S27-5		21.58 V.	21.89 V.
5.10.12.4	Htr + ripple	Seen on Scope	<630 mV pk-pk	50 mV.	30 mV.
5.10.12.5	Htr - voltage	S26-2, S27-6		-22.19 V.	-22.09 V.
5.10.12.6	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	50 mV.	30 mV.
5.10.12.7	CDVU voltage	S26-3, S27-3		7.550 V.	7.701 V.
5.10.12.8	CDVU ripple	Seen on Scope	<40 mV pk-pk	60 mV.	30 mV.
5.10.12.9	Outgas - output voltage	S26-3, S27-7		86.65 V.	86.90 V.
5.10.12.10	Outgas - output ripple	Seen on Scope	2.50V pk-pk	250 mV.	250 mV.
5.10.12.11	Parasitic output voltage	S26-3, S27-9 (S27-10 for RDT)		30.23 V.	30.34 V.
5.10.12.12	Parasitic output ripple	Seen on Scope	<900 mV pk-pk	100 mV.	100 mV.

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.13.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		1.0119 V.	1.2072 V.
5.10.13.2	SMA Htr + output	S26-5, S28-5		3.941 V.	3.992 V.
5.10.13.3	SMA Htr -	S26-5, S28-6		4.014 V.	4.066 V.
5.10.13.4	CDVU	S26-6, S28-3		4.242 V.	4.332 V.
5.10.13.5	Outgas output telemetry	S26-6, S28-7		4.326 V.	4.363 V.

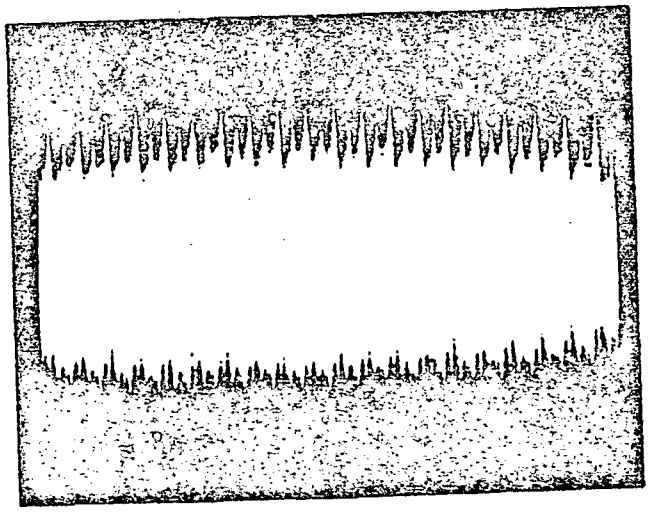
5.10.14.1 Photograph of reflected input current ripple in outgas mode — PRIMARY SIDE



(2mA) CURRENT/DIV: 2mA. A.C.

(10uS) SWEEP RATE: 10 μsec.

5.10.14.1 Photograph of reflected input current ripple in outgas mode — REDUNDANT SIDE



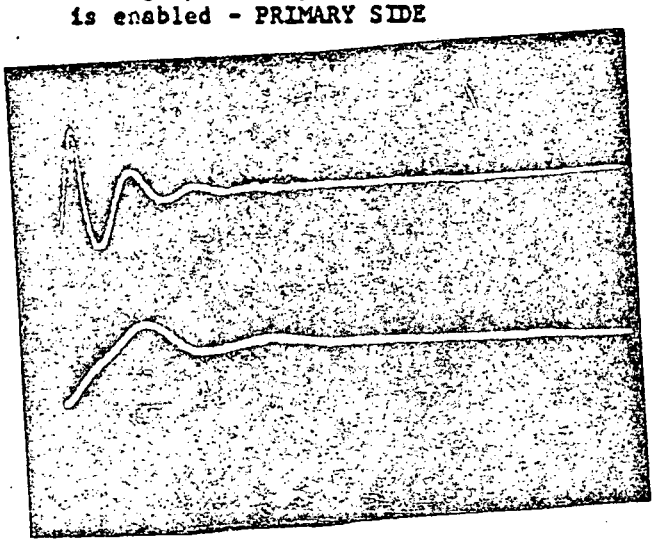
CURRENT/DIV: 2mA. A.C.

SWEEP RATE: 10μ sec.

10.4 Performance test (continued)

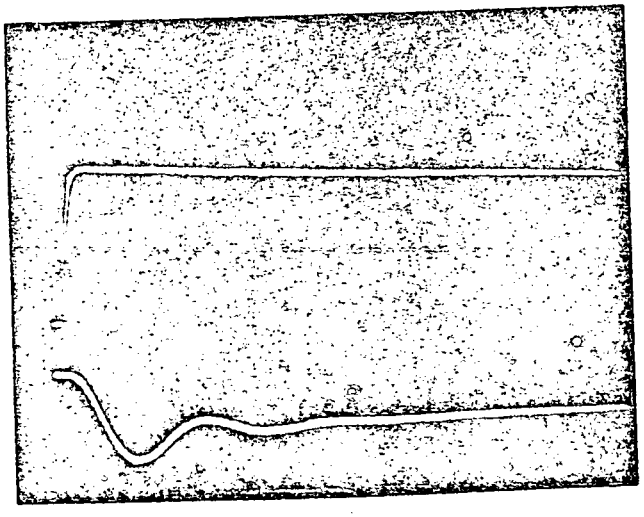
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.1.1	Input current with CDVU off.	S26-1, S27-2 (S27-4 for RDT)		40.22 mV.	42.98 mV.

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1V
(200mA) CURRENT/DIV: 200 m Amp.
(1mS) SWEEP RATE: 1 msec.

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled - PRIMARY SIDE

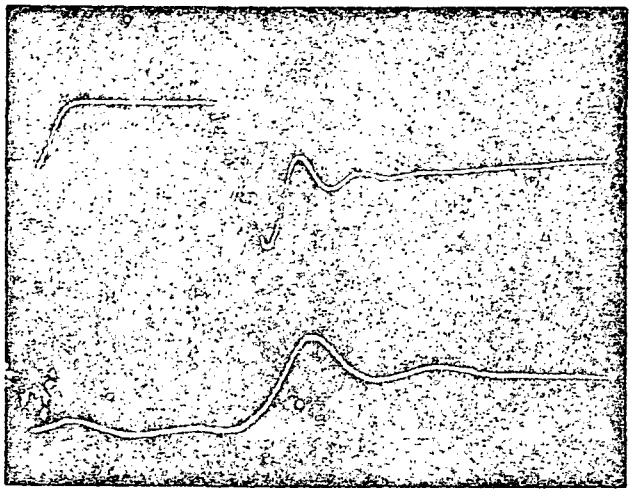


(2V) VOLTAGE/DIV: 1V
(200mA) CURRENT/DIV: 200 m. Amp.
(2mS) SWEEP RATE: 1 msec.

10.4 Performance test (continued)

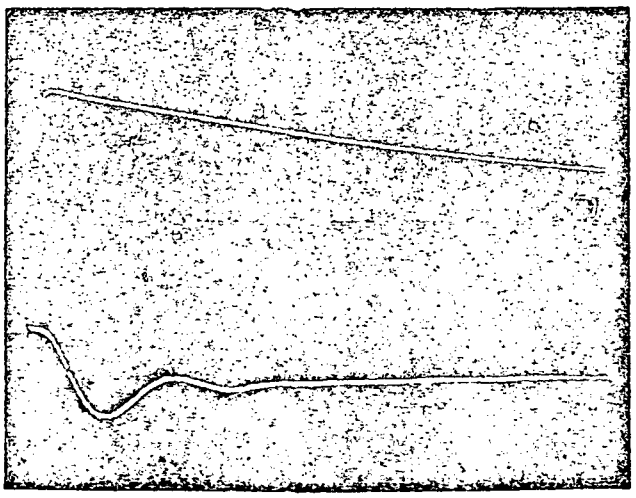
E. PARA.	DESCRIPTION

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled – REDUNDANT SIDE



) VOLTAGE/DIV: 1V.
)mA) CURRENT/DIV: 200 mA.
5) SWEEP RATE: 1 m SEC.

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled – REDUNDANT SIDE

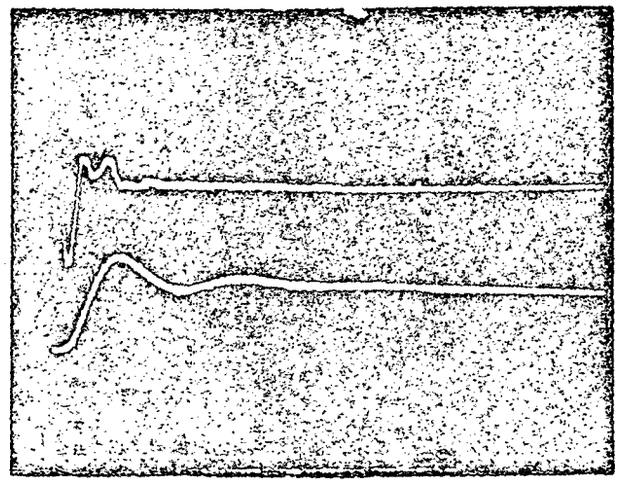


(2V) VOLTAGE/DIV: 1V.
(200mA) CURRENT/DIV: 200 mA.
(2mS) SWEEP RATE: 1 m sec

10.4 Performance Test (continued)

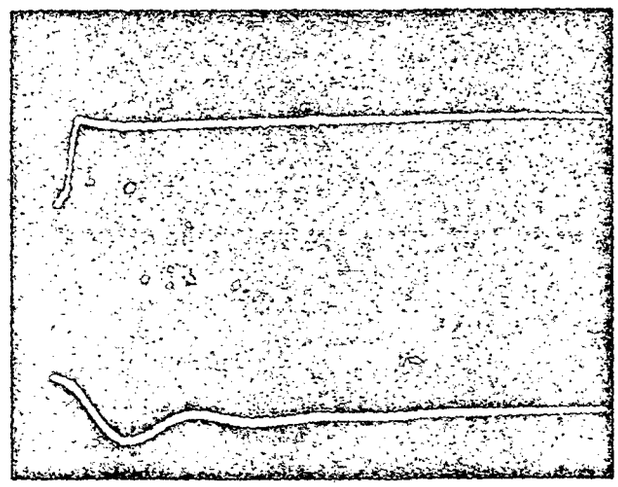
EF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.2.1	Input bus current with outgas disabled	S26-1, S27-2 (S27-4 for RDT)		14.770 mV.	17.523 mV.

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5 V.
(2A) CURRENT/DIV: 2 A.
(1mS) SWEEP RATE: 1msec.

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - PRIMARY SIDE

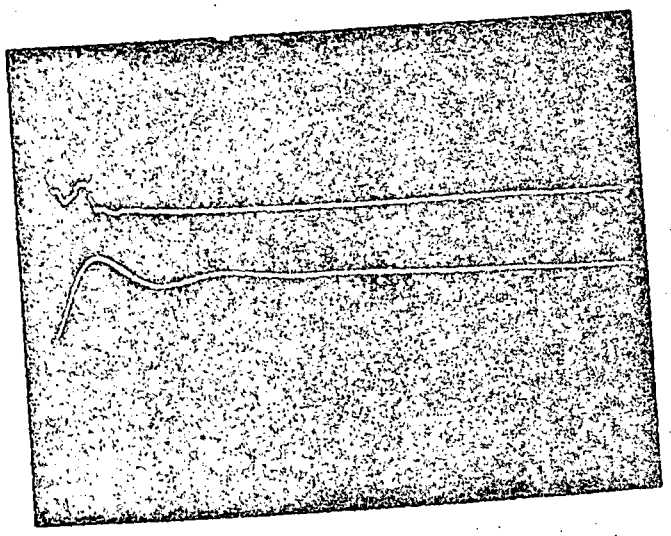


(5V) VOLTAGE/DIV: 5V.
(2A) CURRENT/DIV: 2A.
(2mS) SWEEP RATE: 1msec.

10.4 Performance test (continued)

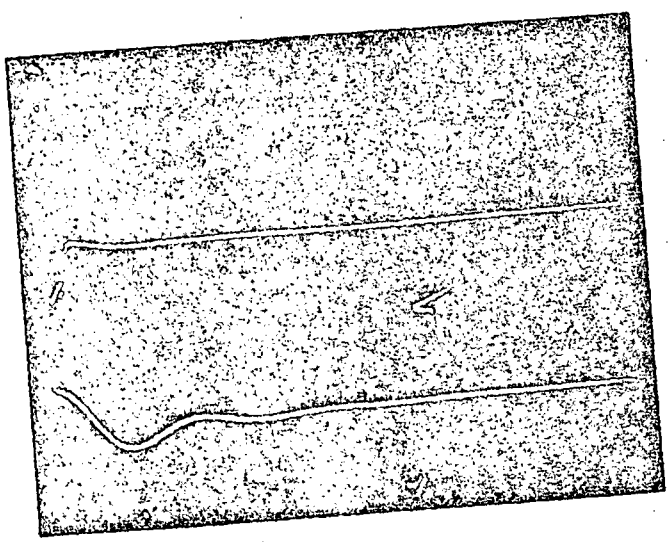
T. PARA.	DESCRIPTION

e.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V.
(2A) CURRENT/DIV: 2A.
(500uS) SWEEP RATE: 1 m sec.

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V.
(2A) CURRENT/DIV: 2A.
(1mS) SWEEP RATE: 1 m sec.

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITION	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.16.1	BPS voltage	S26-1, S27-1 (S27-3 for RDT)		28.00 V. (49)	28.00 V.
5.10.16.2	BPS current	S26-1, S27-2 (S27-4 for RDT)		17.578 mV. (50)	20.49 mV.
5.10.16.3	SMA Htr +output voltage	S26-2, S27-5		21.69 V. (13)	21.53 V.
5.10.16.4	SMA Htr +load current	S26-8, S34-1		46.772 V. (35)	41.09 mV.
5.10.16.5	SMA Htr -output voltage	S26-2, S27-6		-22.07 V. (14)	-22.30 V.
5.10.16.6	SMA Htr -load current	S26-8, S34-2		-8.716 mV. (39)	-8.4 mV.
5.10.16.7	CDVU output voltage	S26-3, S27-3		7.545 V. (20)	7.697 V.
5.10.16.8	CDVU load current	S26-8, S34-10		.2696 V. (45)	.2751 V.
5.10.16.9	Parasitic output voltage	S26-3, S27-9 (S27-10)		30.64 V. (23)	30.83 V.
5.10.16.10	Parasitic load current	S26-8, S34-7		142.76 mV. (25)	143.14 mV.
5.10.16.11	Input power (5.10.16.1 x 5.10.16.2)			49.218	57.372 (46)
5.10.16.12	Output power ((5.10.16.3 x 5.10.16.4) + (5.10.16.5 x 5.10.16.6) + (5.10.15.7 x 5.10.16.8) + (5.10.16.9 x 5.10.16.10))	(Primary) NA	(Redundant) NA	17.17	17.504
5.10.16.13	Efficiency ((5.10.16.12) ÷ (5.10.16.11)) x 100%			34.9%	30.5%

SMA HTR+= 2.052
SMA HTR-= .196
CDVU= 4.375
PARASITIC= 11.031
INPUT POWER= 57.372
OUTPUT POWER= 17.504
EFFICIENCY= 30.5 %

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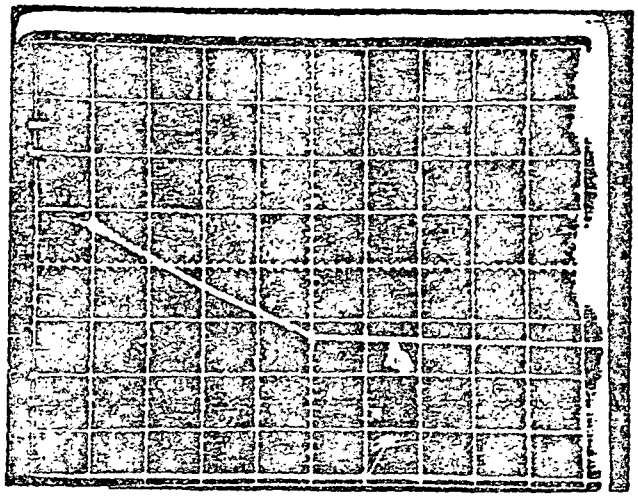
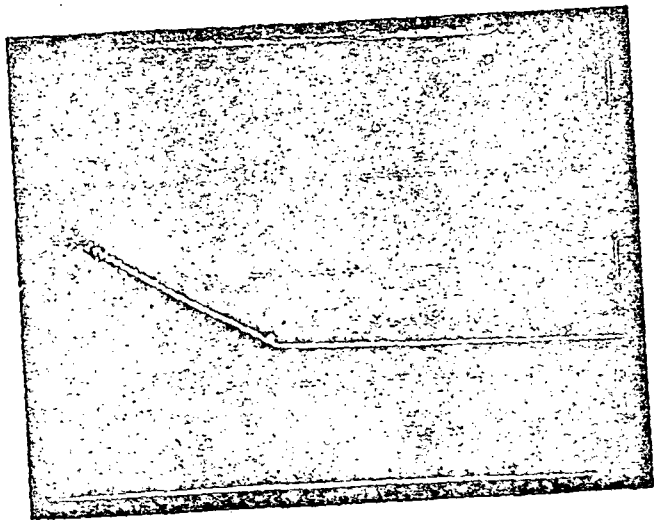
10.4 Performance test (continued)

5.10.17.1 Photograph of input bus current and input bus voltage as is disable - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V.
(2A) CURRENT/DIV: 2 Amps.
(1mS) SWEEP RATE: 1 msec.

5.10.17.1 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V.
(2A) CURRENT/DIV: 2 Amps.
(1mS) SWEEP RATE: 1 msec.

(9.98)

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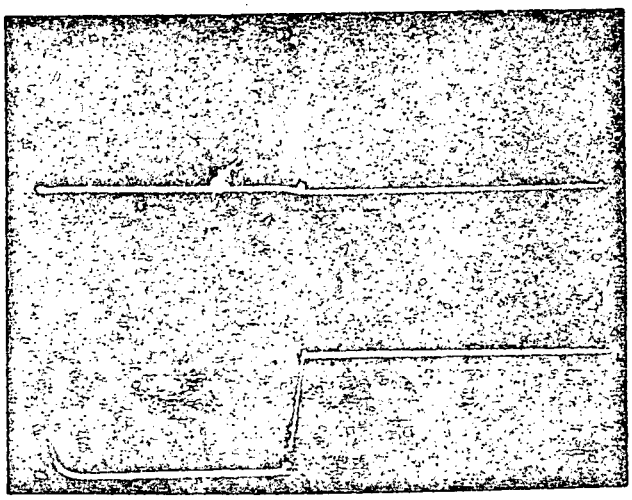
10.4 Performance test (continued)

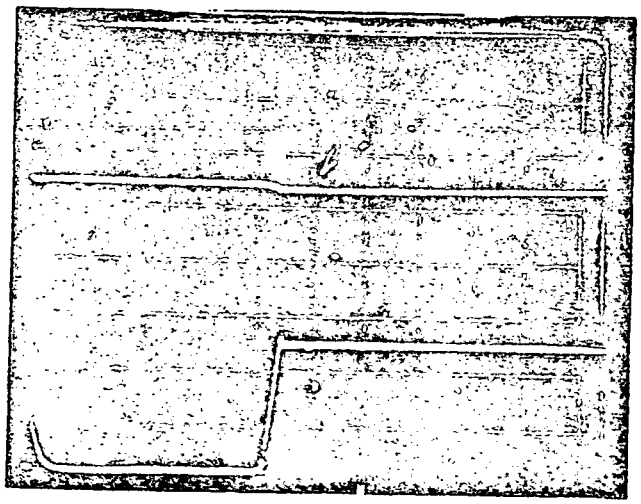
5.10.17.2 Unit stays off (check) ✓ Primary ✓ Redundant

5.10.17.3 Photograph of input bus current and input bus voltage as is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(100mS) SWEEP RATE: 100 μsec.

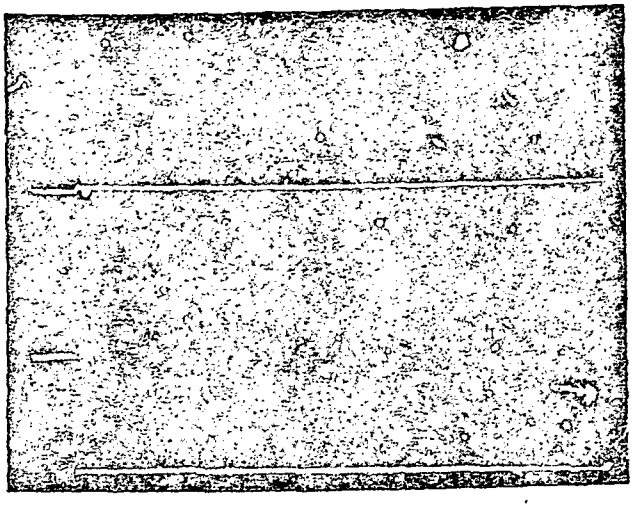
5.10.17.3 Photograph of input bus current and input bus voltage as as is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 5V.
(2A) CURRENT/DIV: 2A.
(100mS) SWEEP RATE: 100 μsec.

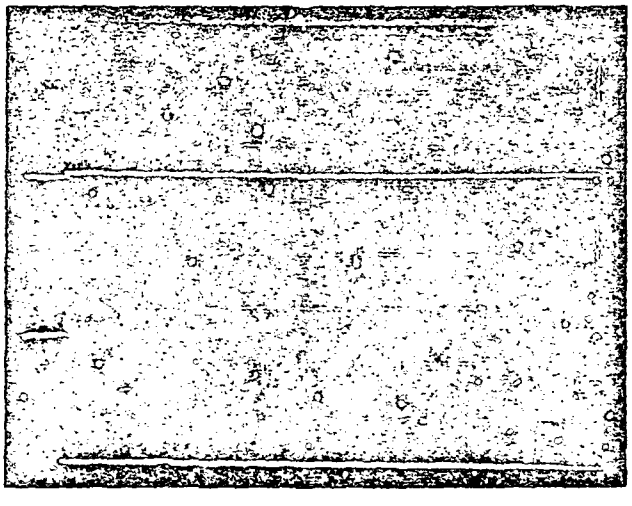
10.4 Performance test (continued)

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 5V.
(2A) CURRENT/DIV: 2 A.
(10mS) SWEEP RATE: 10 msec.

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE

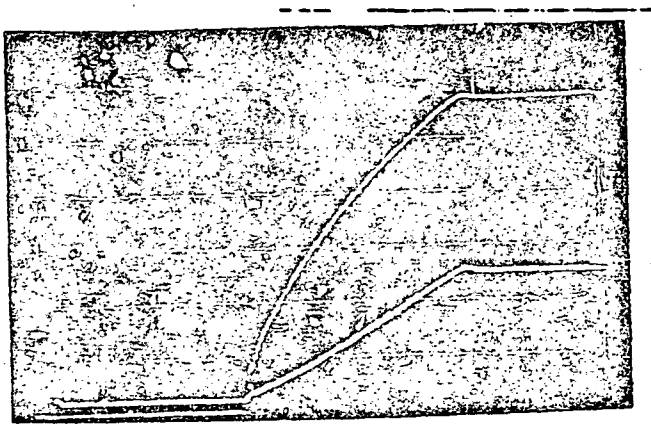


(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2 A
(10mS) SWEEP RATE: 10 msec

Performance test (continued)

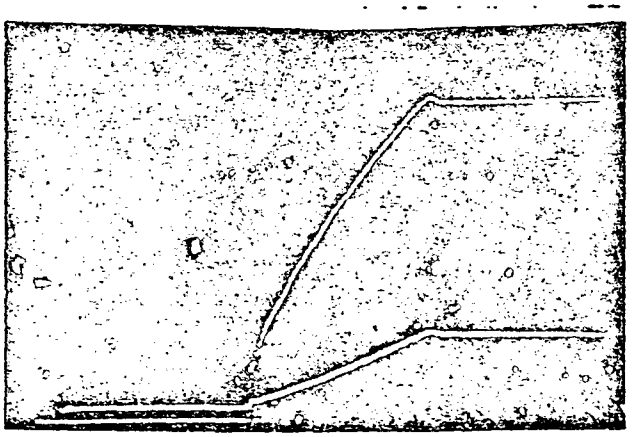
ARA	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.17.5	Record that UUT operates correctly.		(checkmark)	✓	✓

5.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V.
(5A) CURRENT/DIV: 5A.
(20mS) SWEEP RATE: 10 m sec

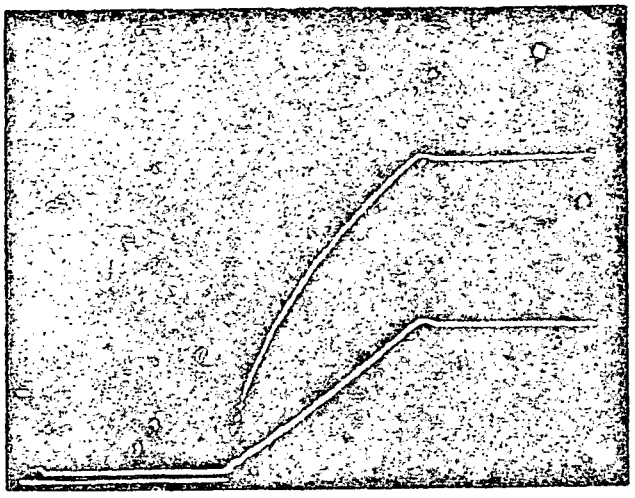
5.10.18.2 Photograph of input bus current and parasitic output voltage as parasitic enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V.
(5A) CURRENT/DIV: 5A.
(20mS) SWEEP RATE: 10 m sec.

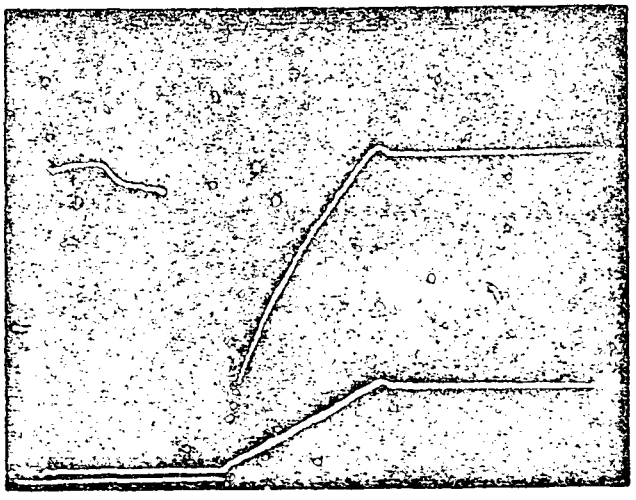
.4 Performance test (continued)

.8.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 10 m sec.

3.10.18.2 Photograph of input bus current and MUX output voltage as parasitic enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5v) Volts/Div: 5V.
(5A) Current/Div: 5 Amps.
(20mS) Sweep Rate: 10 m sec.

10.4 Performance test (continued)

℄. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.18.4	Undervoltage Trip Point (ON/OFF)	S26-1, S27-1 (S27-3 for RDT)	18.0 ±1.50V	18.07 V. ✓	18.04 V. ✓
5.10.18.5	UUT stays OFF			✓	✓
5.10.18.6	Undervoltage Trip Point (OFF/ON)	S26-1, S27-1 (S27-3 for RDT)	19.0 ±1.50V	18.9 V.	18.9 V.
5.10.18.7	Overvoltage Trip Point	S26-1, S27-1 (S27-3 for RDT)	38.0 ± 2V	37.8 V. ✓	38.8 V. SCH 2 ✓
5.10.18.8	UUT stays OFF			✓	✓
5.10.18.9	UUT turns ON			✓	✓

Feb. 5, 1982
DATE

Brown / CRAWFORD
TESTER(S)

10.4 Performance test - Long Form ✓

PROTOFLIGHT N/A, OR FLIGHT ✓, S/N 014 TEMPERATURE: AMB
IN-PROCESS N/A, QUAL N/A, OR ACCEPTANCE ✓
TESTING PHASE Final Ambient LINE VOLTAGE: 35 VOLTS

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.1.1	Calibrate cmd gen	--	--	✓	
5.10.2.1	Input bus current	S26-1, S27-2 (S27-4 for redundant)		0.232 A.	.227
5.10.2.2	MUX output voltage	S26-3, S27-1	30.0 ±0.90V	29.65 V.	30.40
5.10.2.3	MUX load current	S26-3, S27-12	3.55 ±0.40A	32.91 mA	32.73

The rest of Section 5.10.2 requires only checking voltage - indicate by checkmarks.

5.10.2.4.1	B1 + output voltage	S26-1, S27-5	✓	✓
5.10.2.4.2	B1 -	S27-6	✓	✓
5.10.2.4.3	B1 -	S27-5	✓	✓
5.10.2.4.4	B1 +	S27-7	✓	✓
5.10.2.5.1	B2 +	S27-7	✓	✓
5.10.2.5.2	B2 -	S27-8	✓	✓
5.10.2.5.3	B2 -	S27-8	✓	✓
5.10.2.5.4	B2 +	S27-7	✓	✓
5.10.2.6.1	B3 +	S27-9	✓	✓
5.10.2.6.2	B3 -	S27-10	✓	✓
5.10.2.6.3	B3 -	S27-10	✓	✓
5.10.2.6.4	B3 +	S27-9	✓	✓
5.10.2.7.1	B4 +	S27-11	✓	✓
5.10.2.7.2	B4 -	S27-12	✓	✓
5.10.2.7.3	B4 -	S27-12	✓	✓
5.10.2.7.4	B4 +	S26-1, S27-11	✓	✓
5.10.2.8.1	B5,7+	S26-2, S27-1	✓	✓
5.10.2.8.2	B5,7-	S27-2	✓	✓
5.10.2.8.3	B5,7-	S27-2	✓	✓
5.10.2.8.4	B5,7+	S27-1	✓	✓
5.10.2.9.1	B6 +	S27-3	✓	✓
5.10.2.9.2	B6 - output voltage	S26-2, S27-4		✓

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.2.9.3	B6 - output voltage	S26-2, S27-4		✓	✓
5.10.2.9.4	B6 + output voltage	S26-2, S27-3		✓	✓
5.10.2.10.1	SMA RTN + output voltage	S27-5		✓	✓
5.10.2.10.2	-	S27-6		✓	✓
5.10.2.10.3	-	S27-6		✓	✓
5.10.2.10.4	-	S27-5		✓	✓
5.10.2.11.1	-7V	S26-2, S27-7		✓	
5.10.2.11.2	-7V	(S27-8 for RDT)		✓	✓
5.10.2.12.1	+29V	S26-2, S27-9		✓	
		(S27-11 for RDT)			✓
5.10.2.12.2	-29V	S26-2, S27-10		✓	
		(S27-12 for RDT)			✓
5.10.2.12.3	-29V	S26-2, S27-10		✓	✓
5.10.2.12.4	SMA RTN +29V	S26-2, S27-9		✓	✓
5.10.2.13.1	Radiometer	S26-3, S27-2		✓	✓
5.10.2.13.2	Radiometer	S27-2		✓	✓
5.10.2.14.1	CDVU	S27-3		✓	✓
5.10.2.14.2	CDVU	S27-3		✓	✓
5.10.2.15.1	Analog +	S27-4		✓	✓
5.10.2.15.2	Analog -	S27-5		✓	✓
5.10.2.15.3	Analog -	S27-5		✓	✓
5.10.2.15.4	Analog +	S27-4		✓	✓
5.10.2.16.1	Electromech.	S27-6		✓	✓
5.10.2.16.2	Electromech.	S27-6		✓	✓
5.10.2.17.1	Outgas output voltage	S26-3, S27-7		✓	✓
5.10.3.1	Bus voltage	S26-1, S27-1			
		(S27-3 for RDT)		35.00 (49)	35.00
5.10.3.2	MUX load current	S26-3, S27-12	4.130 ±0.025A	41.31 V.	41.43
5.10.3.3	Bus current	S26-1, S27-2			
		(S27-4 for RDT)		105.51 ± (50)	107.79
5.10.3.3.2	BPS Voltage	S26-1, S27-1 S27-3)		34.99 V.	34.99
5.10.3.3.3	BPS Current	S26-1, S27-2 (S27-4)		105.53 V.	107.89
5.10.3.3.4	MUX Current	S26-3, S27-12		41.29 V	41.44

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	REDUNDANT
5.10.3.4.1	B1 + output voltage	S26-1, S27-5	20.50 ±2.50V	20.53 V. (1)	20.79
5.10.3.4.2	B1 + output ripple	Look on Scope	<600 mV pk-pk	20 mV	20
5.10.3.4.3	B1 - output voltage	S26-1, S27-6	-20.50 ±2.50V	-20.54 V (2)	20.81
5.10.3.4.4	B1 - output ripple	Look on Scope	<600 mV pk-pk	20 mV	20
5.10.3.5.1	B2 + output voltage	S26-1, S27-7	20.50 ±2.50V	20.34 V (3)	20.62
5.10.3.5.2	B2 + output ripple	Look on Scope	<600 mV pk-pk	20 mV	20
5.10.3.5.3	B2 - output voltage	S26-1, S27-8	-20.50 ±2.50V	-20.37 V (4)	20.64
5.10.3.5.4	B2 - output ripple	Seen on Scope	<600 mV pk-pk	20 mV	20
5.10.3.6.1	B3 + output voltage	S26-1, S27-9	20.50 ±2.50V	20.20 V (5)	20.55
5.10.3.6.2	B3 + output ripple	Seen on Scope	<600 mV pk-pk	20 mV	20
5.10.3.6.3	B3 - output voltage	S26-1, S27-10	-20.50 ±2.50V	-20.36 V (6)	20.63
5.10.3.6.4	B3 - output ripple	Seen on Scope	<600 mV pk-pk	25 mV	20
5.10.3.7.1	B4 + output voltage	S26-1, S27-11	20.50 ±2.50V	20.51 V (7)	20.80
5.10.3.7.2	B4 + output ripple	Seen on Scope	<600 mV pk-pk	30 mV	20
5.10.3.7.3	B4 - output voltage	S26-1, S27-12	-20.50 ±2.50V	-20.53 V (8)	20.81
5.10.3.7.4	B4 - output ripple	Seen on Scope	<600 mV pk-pk	20 mV	20
5.10.3.8.1	B5,7 + voltage	S26-2, S27-1	20.50 ±2.50V	20.08 V. (9)	20.17
5.10.3.8.2	B5,7 + ripple	Seen on Scope	<600 mV pk-pk	30 mV	40
5.10.3.8.3	B5,7 - voltage	S26-3, S27-2	-20.50 ±2.50V	-20.01 V. (10)	20.19
5.10.3.8.4	B5,7 - ripple	Seen on Scope	<600 mV pk-pk	30 mV	40.
5.10.3.9.1	B6 + voltage	S26-2, S27-3	20.50 ±2.50V	20.29 (11)	20.53
5.10.3.9.2	B6 + ripple	Seen on Scope	<600 mV pk-pk	20 mV.	20
5.10.3.9.3	B6 - voltage	S26-2, S27-4	-20.50 ±2.50V	-20.30 V. (12)	20.55
5.10.3.9.4	B6 - ripple	Seen on Scope	<600 mV pk-pk	-20 mV	20
5.10.3.10.1	SMA Htr + voltage	S26-2, S27-5	21.20 ±2.12V	22.11 V. (13)	22.41
5.10.3.10.2	SMA Htr + ripple	Seen on Scope	<630 mV pk-pk	20 mV.	20
5.10.3.10.3	SMA Htr - voltage	S26-2, S27-6	-21.20 ±2.12V	-22.62 V. (14)	22.92
5.10.3.10.4	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	26 mV	20
5.10.3.11.1	SMA +7V voltage	S26-2, S27-7 (S27-8 for RDT)	7.00 ±0.80V	7.645 V (15)	7.827
5.10.3.11.2	SMA +7V output ripple	Seen on Scope	<210 mV pk-pk	35 mV	40

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.3.12.1	SMA +29V output voltage	S26-2, S27-9 (S27-11 for RDT)	29.50 ±1.50V	30.31 V (16)	30.70
5.10.3.12.2	SMA +29V ripple	Seen on Scope	<870 mV, pk-pk	50 mV	60
5.10.3.12.3	SMA -29V voltage	S26-2, S27-10 (S27-12 for RDT)	-29.50 ±1.50V	-30.30 (17)	30.72
5.10.3.12.4	SMA -29V ripple	Seen on Scope	<870 mV pk-pk	60 mV	60
5.10.3.13.1	MUX voltage	S26-3, S27-1	30.00 ±0.90V	29.95 V (18)	30.26
5.10.3.13.2	MUX ripple	Seen on Scope	<900 mV, pk-pk	80 mV	80
5.10.3.14.1	Radiometer voltage	S26-3, S27-2	8.50 ±0.85V	8.465 (19)	5.516
5.10.3.14.2	Radiometer ripple	Seen on Scope	<250 mV pk-pk	30 mV	30
5.10.3.15.1	CDVU voltage	S26-3, S27-3	8.00 ±0.80V	7.531 V (20)	7.709
5.10.3.15.2	CDVU ripple	Seen on Scope	<240 mV pk-pk	25 mV	20
5.10.3.16.1	Analog + voltage	S26-3, S27-4	21.20 ±2.12V	22.31 V (21)	22.46
5.10.3.16.2	Analog + ripple	Seen on Scope	<630 mV pk-pk	40 mV	40
5.10.3.16.3	Analog - voltage	S26-3, S27-5	-21.20 ±2.12V	-22.29 (22)	22.53
5.10.3.16.4	Analog - ripple	Seen on Scope	<630 mV pk-pk	25 mV	20
5.10.3.17.1	Electromech. voltage	S26-3, S27-6	33.40 ±3.34V	32.97 V (23)	33.46
5.10.3.17.2	Electromech. ripple	Seen on Scope	<1.0V pk-pk	40 mV	60
5.10.3.18.1	Outgas voltage	S26-3, S27-7	100.0 ±12.0V	105.21 V	103.84
5.10.3.18.2	Outgas output ripple	Seen on Scope	<3.0V pk-pk	240 mV	225
5.10.4.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		2.933 V	2.992
5.10.4.2.1	Band 1 + volt. telemetry	S26-4, S28-5		3.752	3.812
5.10.4.2.2	Band 1 -	S28-6		3.741	3.790
5.10.4.3.1	Band 2+	S28-7		3.706	3.765
5.10.4.3.2	Band 2-	S28-8		3.695	3.744
5.10.4.4.1	Band 3+	S28-9		3.717	3.746
5.10.4.4.2	Band 3-	S28-10		3.716	3.765
5.10.4.5.1	Band 4+	S28-11		3.726	3.795
5.10.4.5.2	Band 4-	S26-4, S28-12		3.737	3.789
5.10.4.6.1	Band 5,7+	S26-5, S28-1		3.668	3.714
5.10.4.6.2	Band 5,7- volt. telemetry	S26-5, S28-2		3.659	3.676

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10.4 Performance test (continued)

VT, PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.4.7.1	Band 6 + volt. telemtry	S26-5, S28-3		+3.674 V.	3.771
5.10.4.7.2	Band 6 -	S28-4		3.706	3.755
5.10.4.8.1	SMA Htr +	S28-5		4.041	4.102
5.10.4.8.2	SMA Htr -	S28-6		4.103	4.161
5.10.4.9	SMA +7V	S26-5, S28-7 (S27-8 for RDT)		4.903	5.009
5.10.4.10.1	SMA +29V	S26-5, S28-9 (S27-11 for RDT)		4.156	4.236
5.10.4.10.2	SMA -29V	S26-5, S28-10 (S27-12 for RDT)		3.471	3.625
5.10.4.11	MUX	S26-6, S28-1		4.262	4.385
5.10.4.12	Radiometer	S26-6, S28-2		4.644	4.673
5.10.4.13	CDVU	S26-6, S28-3		4.234	4.326
5.10.4.14.1	Analog + volt. telemtry	S26-6, S28-4		3.975	4.018
5.10.4.14.2	Analog -	S26-6, S28-5		3.915	3.949
.10.4.15	Electromech.	S28-6		4.050	4.111
5.10.4.16	Outgas volt. telemetry	S26-6, S28-7		5.274	5.192
5.10.5.1.1	Analog + load current	S26-3, S27-11 mV ÷ 10 = Amps		15.392 mV	(24) 5.600
5.10.5.1.2	MUX	S26-3, S27-12 mV ÷ 10 = Amps		4.133	(25) 4.145
5.10.5.1.3	Band 1 +	S26-7, S34-1 mV ÷ 0.5 = mA		91.36	(26) 92.52
5.10.5.1.4	Band 1 -	S34-2		-91.51	(27) 92.74
5.10.5.1.5	2 +	S34-3		90.32	(28) 91.59
5.10.5.1.6	2 -	S34-4		-91.15	(29) 92.38
5.10.5.1.7	3 +	S34-5		90.97	(30) 91.64
5.10.5.1.8	3 -	S34-6		-90.78	(31) 92.03
5.10.5.1.9	4 +	S34-7		91.25	(32) 92.58
5.10.5.1.10	4 -	S34-8		-90.92	(33) 92.18
5.10.5.1.11	5,7 +	S34-9		90.33	(34) 90.75
5.10.5.1.12	5,7 -	S34-10		-89.50	(35) 90.06
5.10.5.1.13	6 +	S34-11		47.19	(36) 47.75
5.10.5.1.14	Band 6 -	S26-7, S34-12		-47.03	(37) 47.63
5.10.5.1.15	SMA Htr +	S26-8, S34-1 mV ÷ 0.5 = mA		47.68	(38) 49.34
5.10.5.1.16	SMA Htr - load current	S26-8, S34-2 mV = mA		-8.936	(39) 9.057

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.5.1.17	SMA +29V load current	S26-8, S34-3	mV ÷ 0.402 = mA	50.71 mV (44)	51.39
5.10.5.1.18	SMA -29V	S34-4	mV ÷ 0.402 = mA	-50.46 mV (44)	51.17
5.10.5.1.19	SMA +7V	S34-5	V ÷ 0.1 = Amps	.2800 V. (44)	.2845
5.10.5.1.20	Analog -	S34-6	mV ÷ 0.402 = mA	-.2673 V. (45)	.2702
5.10.5.1.21	Radiometer	S34-9	mV ÷ 0.5 = mA	151.53 mV (44)	152.56
5.10.5.1.22	CDVU	S34-10	mV ÷ 0.5 = mA	.2693 V. (45)	.2756
5.10.5.1.23	Electromech. load current	S26-8, S34-11	mV ÷ 0.402 = mA	.2100 V. (44)	.2131
5.10.5.2.1	Bus power supply voltage	S26-1, S27-1 (S27-3 for RDT)		35.01 V. (44)	35.00
5.10.5.2.2	Bus input current	S26-1, S27-2 (S27-4 for RDT)	mV ÷ 10 = Amps	105.64 mV (44)	109.05
5.10.5.2.3	P_{IN} (Section 5.10.5)			369.845	378.175
5.10.5.2.4	P_{IN} (Section 5.10.3)			369.285	377.265
5.10.5.2.5	P_{IN} (avg)			369.565	377.72
5.10.5.2.9	Input current at current limit	26-1, 27-2 (26-1 27-4 Rdt)		122.9 mV.	126.99
	Input voltage at current limit	27-1 (27-3 Rdt)		34.83 V.	34.81
	MUX voltage at current limit	26-3, 27-1		30.10 V.	30.22
	MUX current at current limit	27-12		51.14 mV.	52.37
5.10.5.3.1	P_{OUT}			268.89	274.695
5.10.5.3.2	Efficiency		>70%	73.25%	73.15%

INPUT POWER #2= 369.845
INPUT POWER #1= 369.285
AVE. INPUT POWER= 369.565
OUTPUT POWER= 268.89
EFFICIENCY = 73.25

INPUT POWER #2= 378.175
INPUT POWER #1= 377.265
AVE. INPUT POWER= 377.72
OUTPUT POWER= 274.695
EFFICIENCY = 73.15

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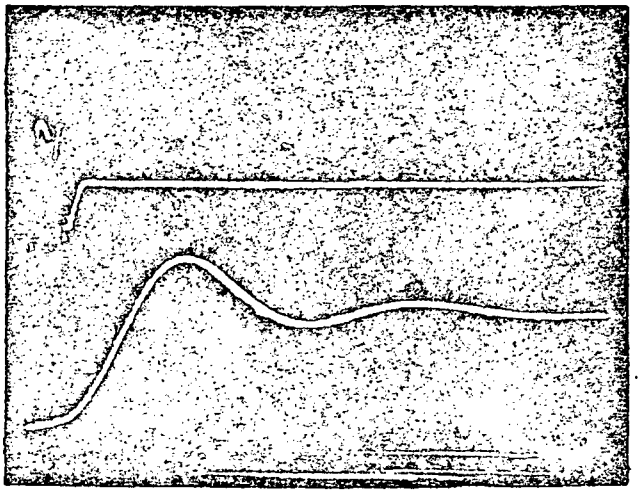
10.4 Performance test (continued)

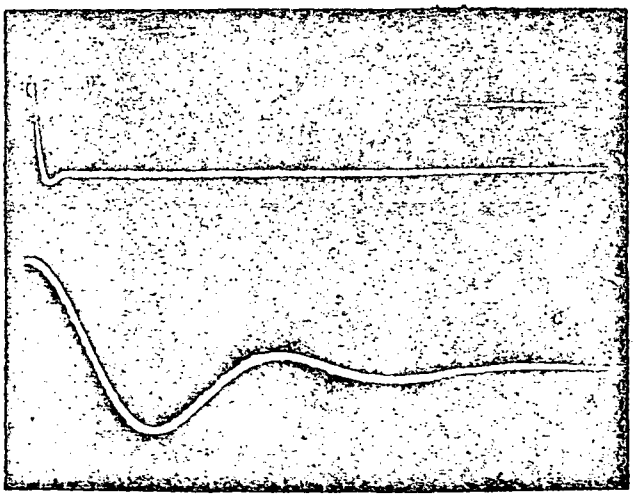
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.6.1	+7V output pulsed	S26-2, S27-7 (S27-8 for RDT)	7.10 ±0.80V	7.043 V	7.206

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-PRIMARY SIDE



.2A) CURRENT/DIV: 0.2 Amp A.C.
1V) VOLTAGE/DIV: 1V/Div
200uS) SWEEP RATE: ~~50~~ 500 μsec.
A.R Brown

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load on SMA +7V outputs is being removed - PRIMARY SIDE

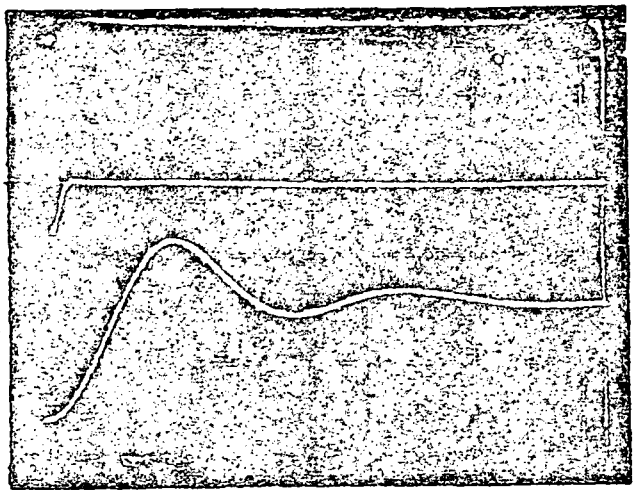


(0.2A) CURRENT/DIV: 0.2A. A.C.
(1V) VOLTAGE/DIV: 1V.
(200uS) SWEEP RATE: 500 μ sec.

10.4 Performance test (continued)

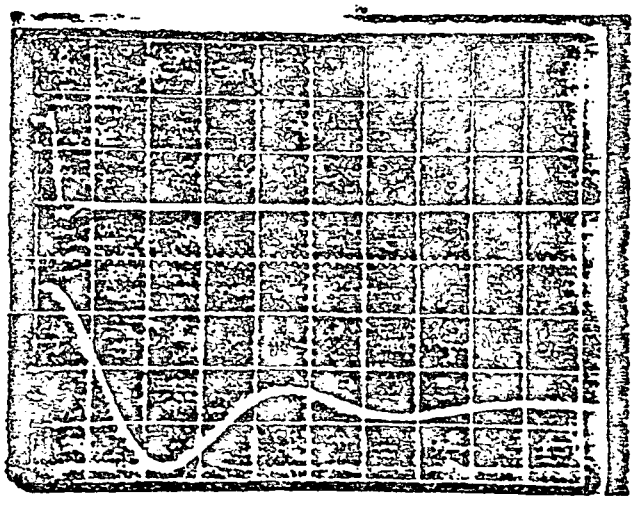
REF. PARA.	DESCRIPTION

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V output is being pulse-loaded-REDUNDANT SIDE



(0.2A) CURRENT/DIV: .2A A.C.
(1V) VOLTAGE/DIV: 1V
(200uS) SWEEP RATE: 500 usec

5.10.6.2 Photograph of transients induced on input bus current and SMA +7V output voltage as pulse-load is being removed-REDUNDANT SIDE



(0.2A) CURRENT/DIV: .2A A.C.
(1V) VOLTAGE/DIV: 1V
(200uS) SWEEP RATE: 500 usec

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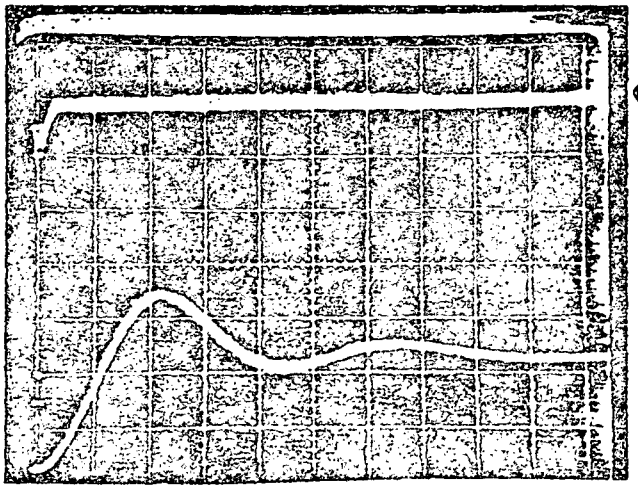
10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY REDUNDANT
5.10.6.3	Input bus current	S26-1, S27-2 (S27-4 for RDT)		110.20 mV. 11276
5.10.6.4	SMA +7V TM- pulsed	S26-5, S28-7 (S28-8 for RDT)		4.573 V. 4717
5.10.6.5	SMA +7V load current-pulsed	(S26-8, S34-5		4653 V 14741

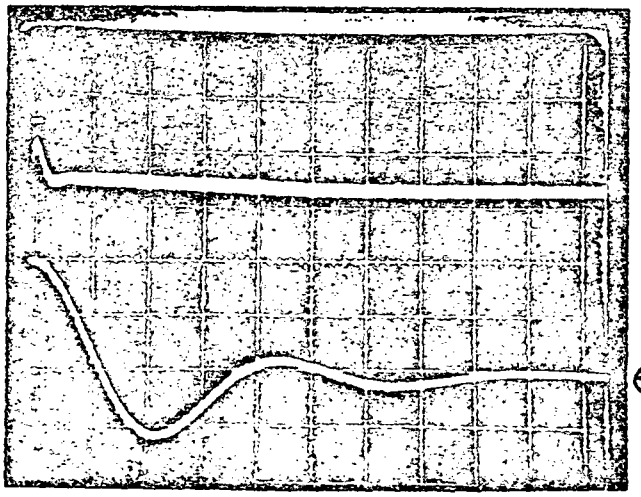
5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as SMA +7V output is being pulse-loaded-PRIMARY SIDE



(1A)* SMA CURRENT/DIV: 0.1 %
(NA) BUS CURRENT/DIV: 200 mA.
(200uS) SWEEP RATE: 500 μ sec.
* Using 0.1 Ω shunt and 100 mV/Div on scope

SMA Current

5.10.6.6 Photograph of transients induced on input bus current and SMA +7V load current as pulse-load is being removed-PRIMARY SIDE

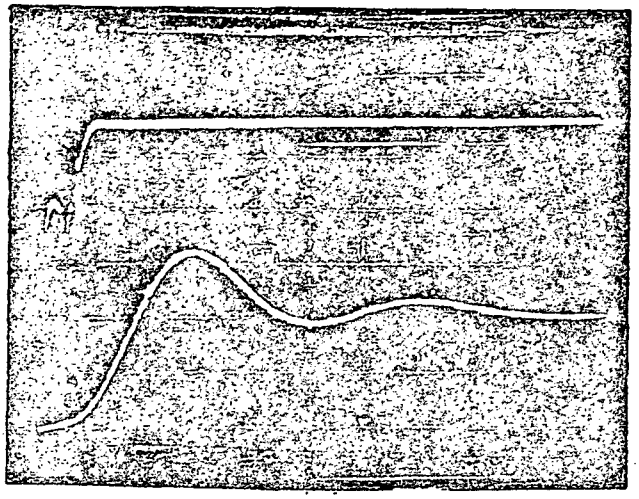


(1A)* SMA CURRENT/DIV: 0.1 %
(NA) BUS CURRENT/DIV: 200 mA
(200uS) SWEEP RATE: 500 μ sec.
*Using 0.1 Ω shunt and 100mV/Div on Scope

SMA Current

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION
5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as SMA + 7V output is being pulse loaded - REDUNDANT SIDE

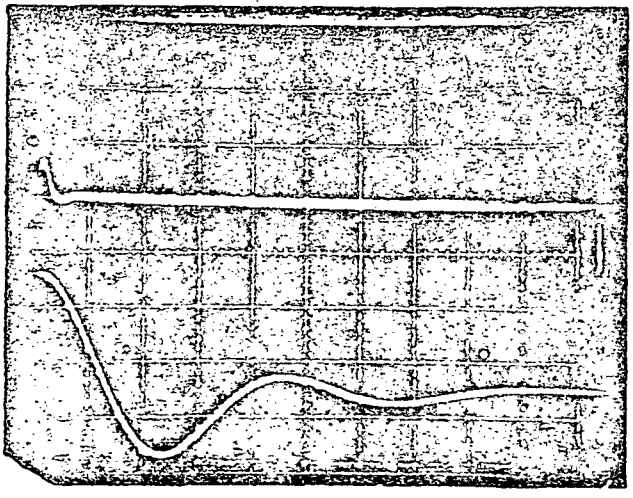


(1A)* SMA CURRENT/DIV: .1
(2A) BUS CURRENT/DIV: 200 mA
(200uS) SWEEP RATE: 500 μsec

*Using 0.1Ω shunt and 100 mV/Div on scope.

2

REF. PARA.	DESCRIPTION
5.10.6.6	Photograph of transients induced on input bus current and SMA + 7V load current as pulse-load is removed - REDUNDANT SIDE



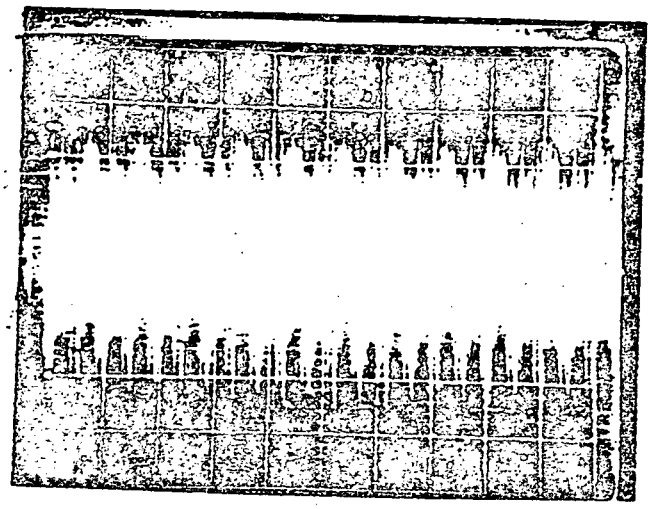
(1A)* SMA CURRENT/DIV: .1
(2A) BUS CURRENT/DIV: 200 mA
(200uS) SWEEP RATE: 500 μsec

*Using 0.1Ω shunt and 100mV/Div on scope.

2

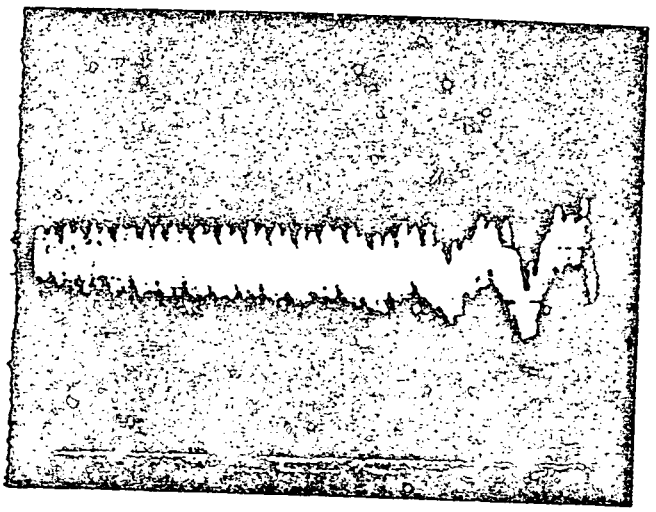
10.4 Performance test (continued)

SF, PARA.	DESCRIPTION
5.10.7.1	Photograph of reflected input current ripple - PRIMARY SIDE



(1mA) CURRENT/DIV: 2m A. A.C.
(10uS) SWEEP RATE: 10 μsec.

5.10.7.1 Photograph of reflected input current ripple - REDUNDANT SIDE

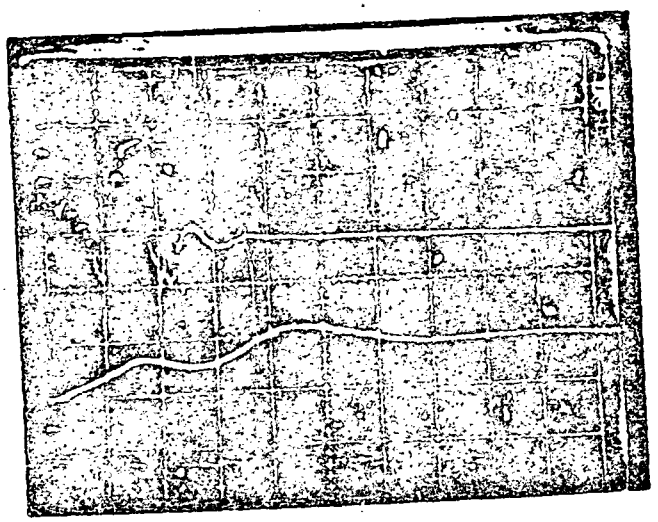


(1mA) CURRENT/DIV: 2m A A.C.
(10uS) SWEEP RATE: 10 μsec

5.10.8.1.1 Input current - full load S26-1, S27-2 (S27-4 for RDT) 105.57 mA 107.87

5.10.8.1.2 Input current w/o analog load Same 84.76 mA 87.08

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is enabled - PRIMARY SIDE

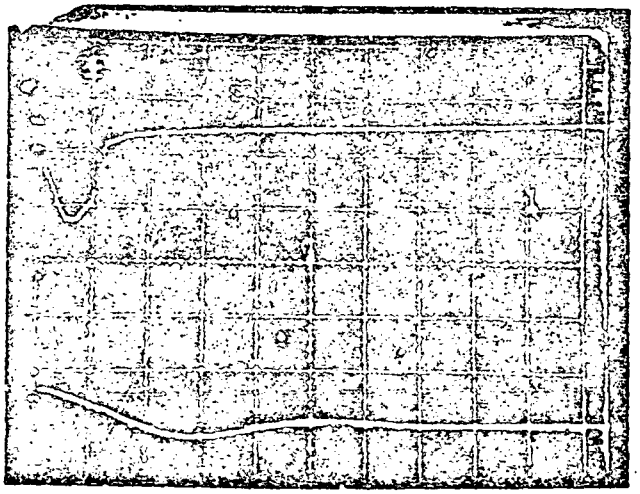


(2V) VOLTAGE/DIV: 2 V

(1A) CURRENT/DIV: 2 Amps.

(500uS) SWEEP RATE: 500 μsec

5.10.8.1.3 Photograph of transients induced on input bus current and analog + voltage as analog output is disabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 1V.

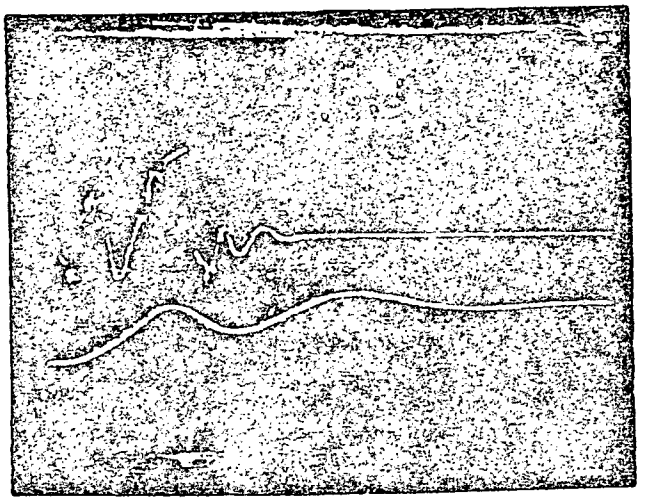
(1A) CURRENT/DIV: 2 Amps.

(1mS) SWEEP RATE: 500 μsec.

10.4 Performance test (continued)

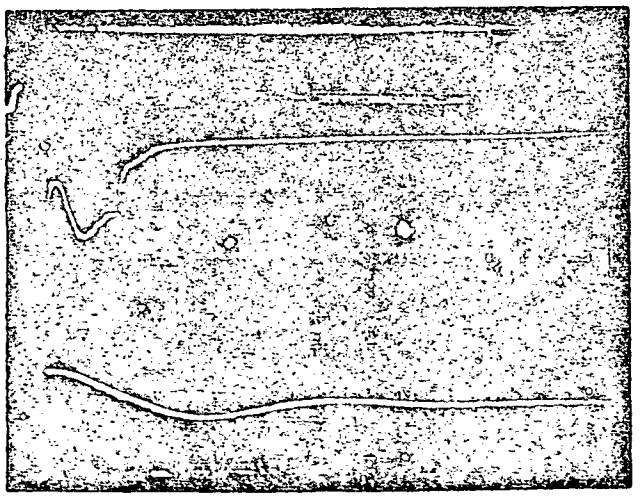
REF. PARA.	DESCRIPTION

5.10.8.1.3 Photograph of transients induced on input bus current and analog + output voltage as analog output is enabled - REDUNDANT SIDE.



(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 2A
(500uS) SWEEP RATE: Stacked

5.10.8.1.3 Photograph of transients induced on input bus current and analog - output voltage as analog output is disabled - REDUNDANT SIDE.

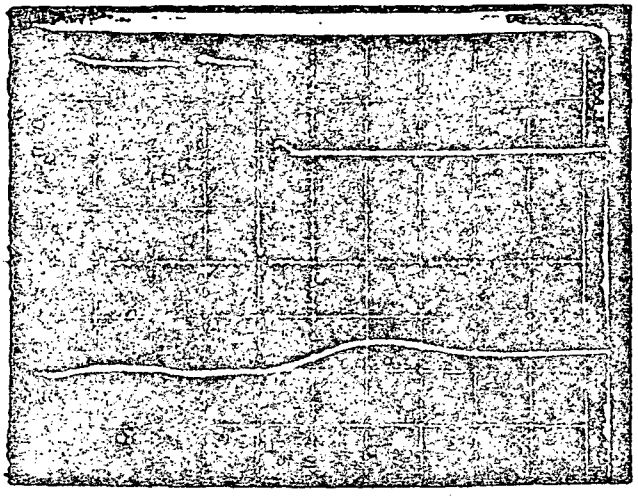


(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: Stacked

10.4 Performance test (continued)

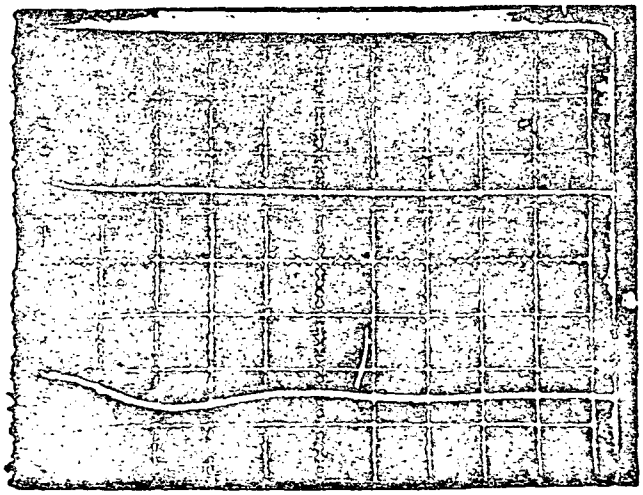
T. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.2.1	Input bus current w/o SMA +7V load	S26-1, S27-2 (S27-4 for RDT)		96.35mV.	95.30

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is enabled - PRIMARY SIDE.



(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1 Amp.
(200uS) SWEEP RATE: 500μsec.

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - PRIMARY SIDE.



(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1Amp.
(2mS) SWEEP RATE: 500μsec.

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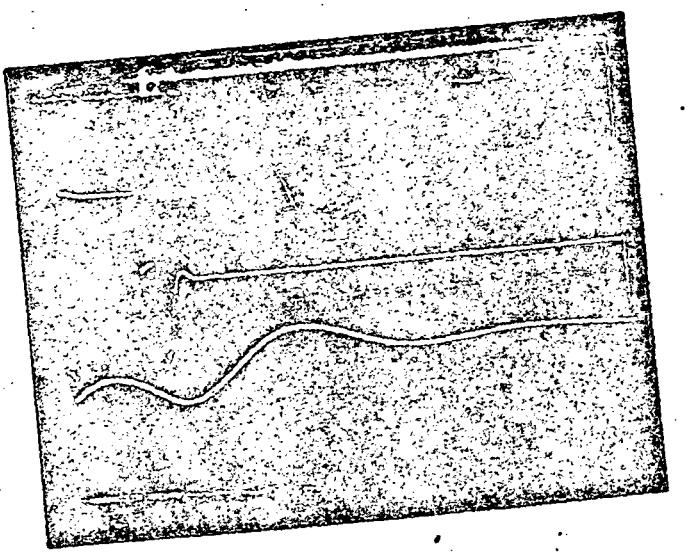
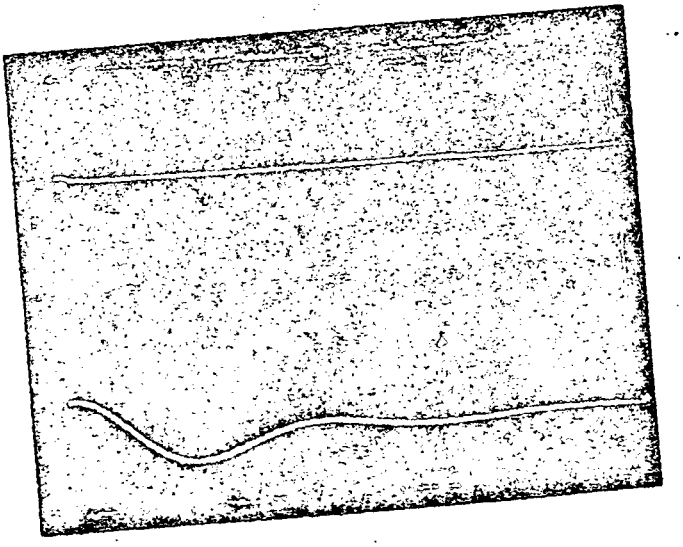
10.4 Performance test (continued)

EF, PARA.	DESCRIPTION
5.10.8.2.2	Photograph of transients induced on input bus current and SMA +7 output voltage as SMA +7V is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(200uS) SWEEP RATE: 50 usec

5.10.8.2.2 Photograph of transients induced on input bus current and SMA +7V output voltage as SMA +7V is disabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 2V
(1A) CURRENT/DIV: 1A
(2mS) SWEEP RATE: 500 usec

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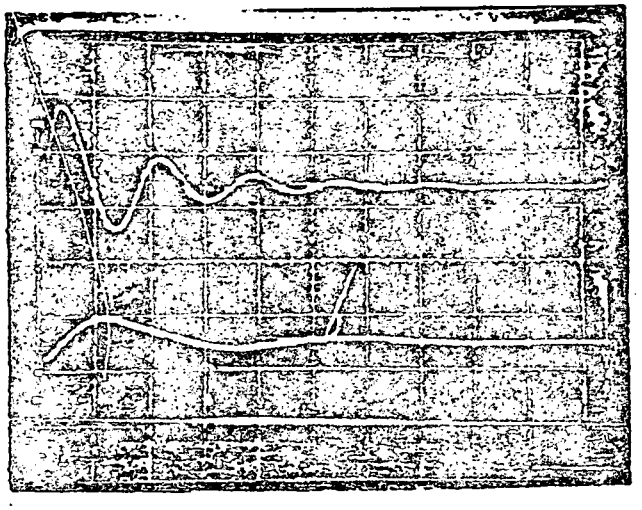
10.4 Performance test (continued)

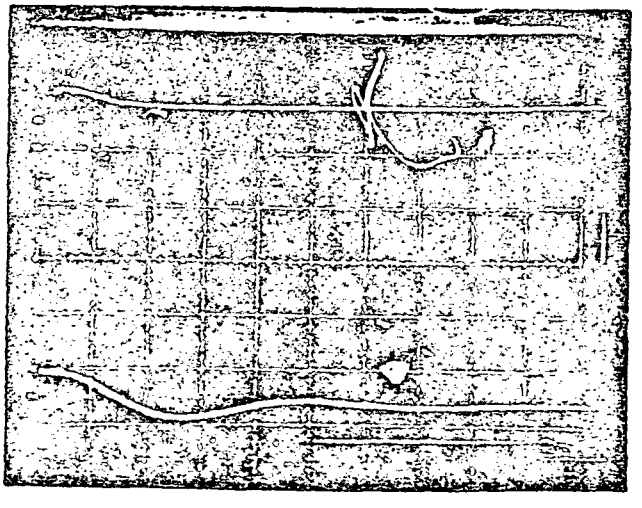
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.8.2.3	Input bus current w/o SMA ±29V load	S26-1, S27-2 (S27-4 for EDT)		102.33 mA.	104.39

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1V
(0.5V) CURRENT/DIV: 0.5 Amp.
(1mS) SWEEP RATE: 500 μsec.

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: 0.5 Amp.
(1mS) SWEEP RATE: 500 μsec.

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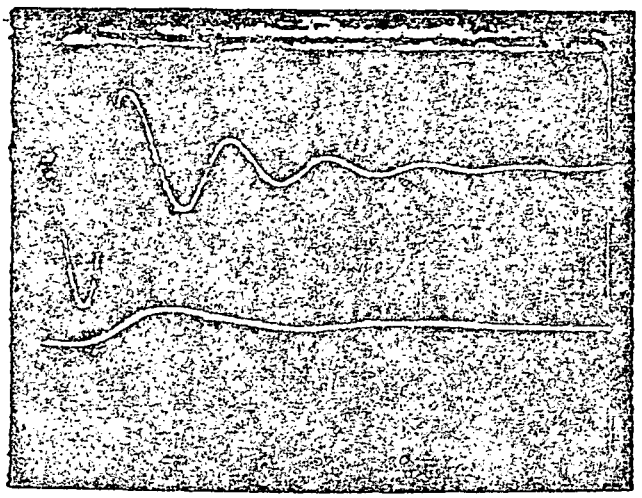
10.4 Performance test (continued)

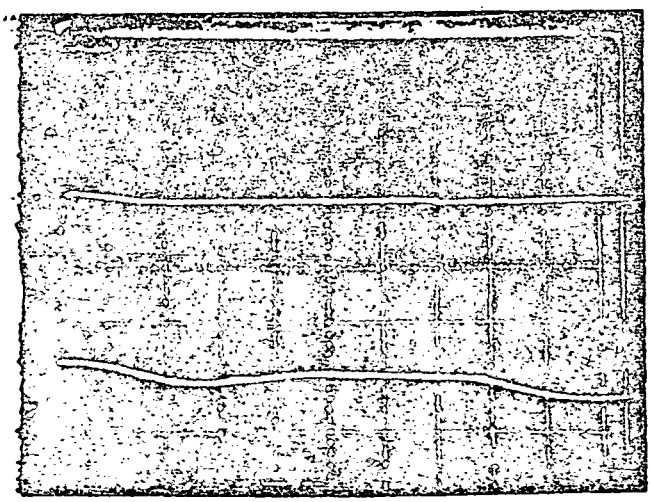
TP. PARA.	DESCRIPTION

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as SMA ±29V is enabled - REDUNDANT SIDE



2V) VOLTAGE/DIV: 1V
0.5A) CURRENT/DIV: .5A
1mS) SWEEP RATE: 500 µsec

5.10.8.2.4 Photograph of transients induced on input bus current and SMA +29V output voltage as ±29V is disabled - REDUNDANT SIDE

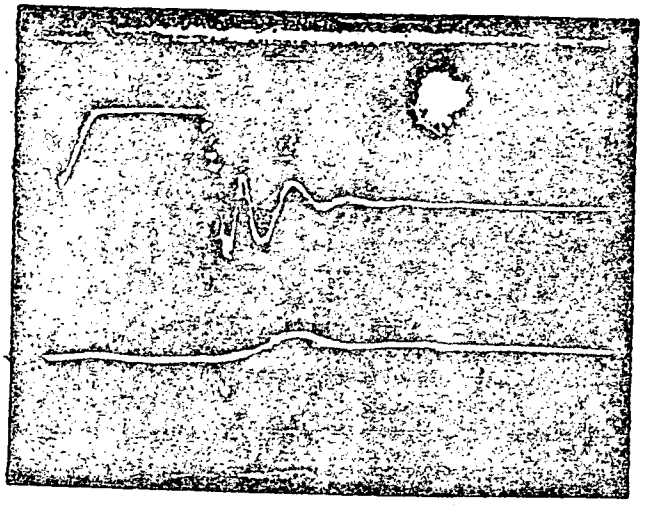


(2V) VOLTAGE/DIV: 1V
(0.5) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 500 µsec

10.4 Performance test (continued)

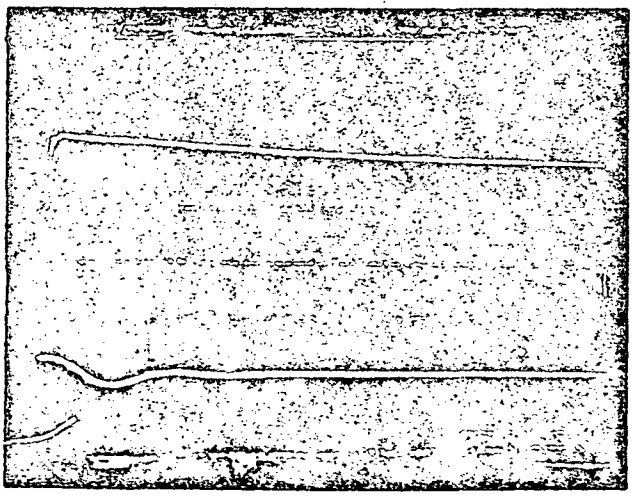
ATP PARA.	DESCRIPTION

5.10.8.3.2 Photograph of transients induced on input bus current and CDVU output voltage as CDVU is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: .5A
(1mS) SWEEP RATE: 1mS

5.10.8.3.2 Photograph as transients induced on input bus current and CDVU output voltage as CDVU is disabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(0.5A) CURRENT/DIV: 5A
(1mS) SWEEP RATE: 1mS

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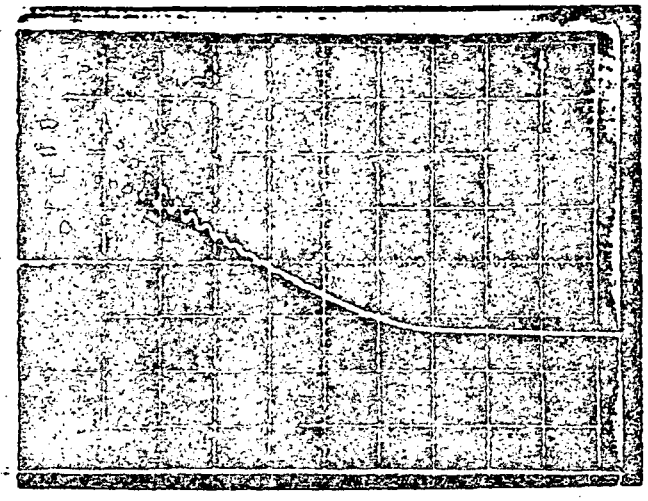
10.4 Performance test (continued)

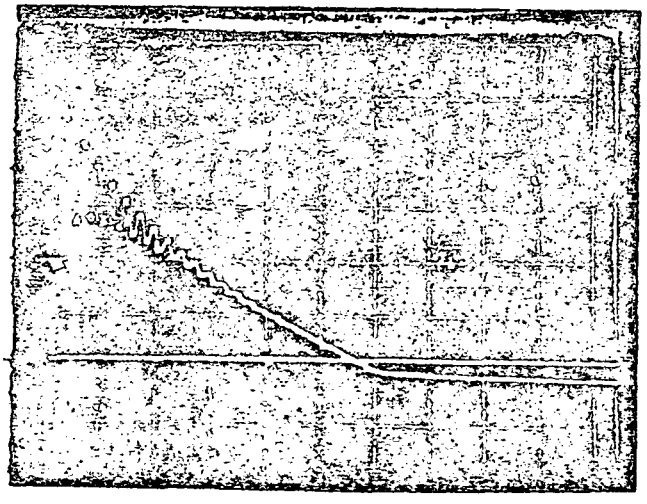
TP. PARA.	DESCRIPTION

5.10.9.1 Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(500uS) SWEEP RATE: 500 μsec.

Photograph of turn-off transient of input bus voltage and input bus current as bus voltage is removed - REDUNDANT SIDE

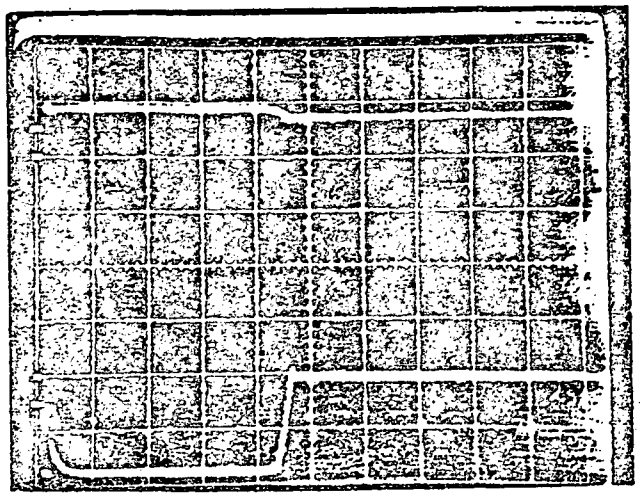


(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(500uS) SWEEP RATE: 500 μsec.

10.4 Performance test (continued)

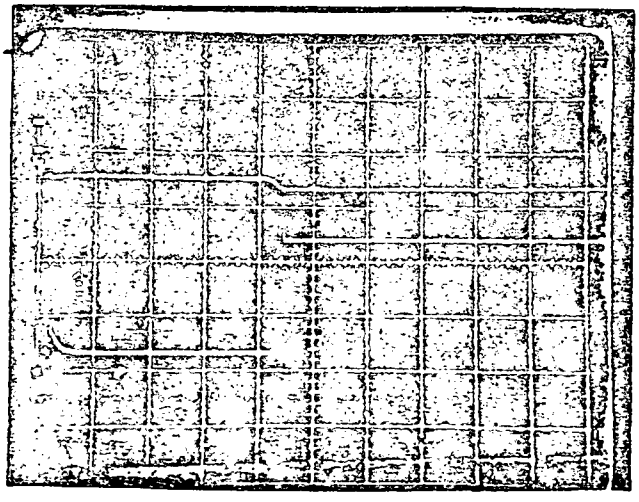
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.9.2	UUT stays off when bus is reapplied.	S1-ON (S2-ON for RDT)	—	✓	✓

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5 Amps.
(100mS) SWEEP RATE: 100 msec.

5.10.9.3 Photograph of turn-on transient of bus voltage and current as ON command is issued - REDUNDANT SIDE

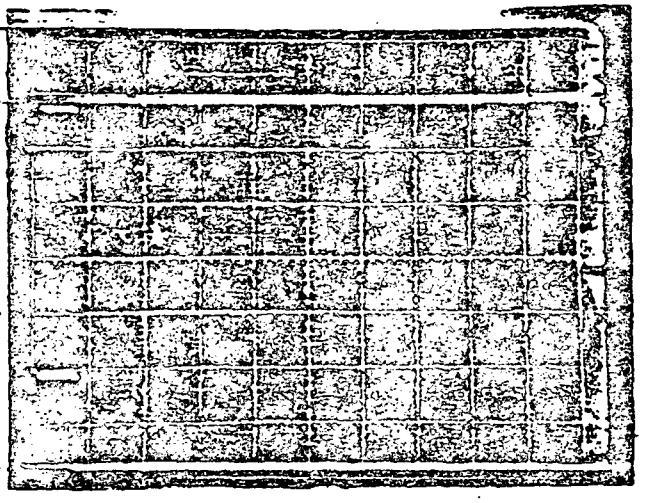


(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(100mS) SWEEP RATE: 100mS

10.4 Performance test (continued)

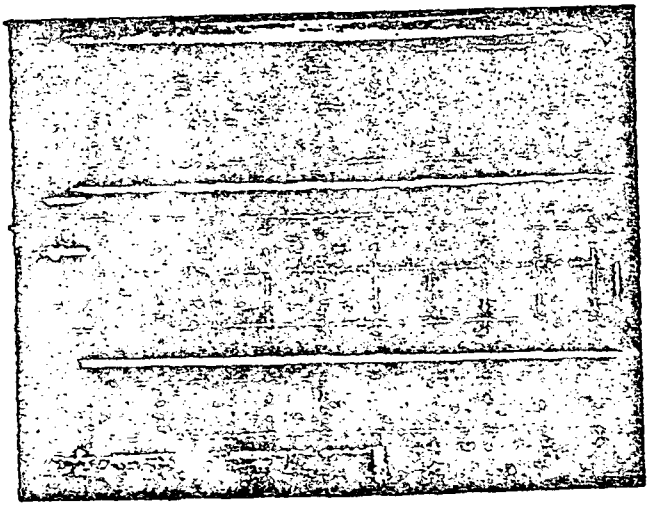
ZF. PARA.	DESCRIPTION

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5 V.
(5A) CURRENT/DIV: 5 Amps.
(10mS) SWEEP RATE: 10m sec.

5.10.9.4 Photograph of turn-off transient of input bus voltage and current as OFF command is issued - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(10mS) SWEEP RATE: 10mS

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	PRIMARY	REDUNDANT
5.10.9.5	Record	S27-2 (S27-4)		105.29 mV.	105.53
5.10.9.6	Record	(S27-4 (S27-2)		89.52 mV.	20.53
	Record	S27-2 (S27-4)		23.11 mV. ✓	95.11 ✓
5.10.9.7	Record that UUT turns on.	(Checkmark)			
5.10.10.1	Input bus current AFTER it reads ~ 17A AND input bus voltage reads ~ 21V.	S26-1, S27-2 (S27-4 for RDT)		110.95 mV.	125.03
5.10.10.2	Input bus voltage with 17.0A load	S26-1, S27-1 (S27-3 for RDT)		35.02 V.	35.00
5.10.10.3	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.035 V.	3.521
5.10.10.4	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.002 V.	3.505
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		NA	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		NA mV.	124.15
5.10.10.5	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		3.002 V.	3026
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.00 V.	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		109.70 mV.	105.47
5.10.10.6	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.500 V.	2.520
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		34.99 V.	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		95.31 mV.	94.43
5.10.10.7	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		2.008 V.	2.003
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.00 V.	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		80.79 mV.	75.18

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	UNITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.10.8	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.5036 V.	1508
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.01 V.	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		62.47 mA.	6290
5.10.10.9	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		1.0026 V.	1097
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.00 V.	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		47.53 mA.	46.15
5.10.10.10	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		0.4916 V.	.5270
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.01 V.	35.00
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		33.00 mA.	30.66
5.10.10.11	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		0.2030 V.	.2164
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.00 V.	3500
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		29.73 mA.	23.35
5.10.10.12	Input current telemetry output	S26-4, S28-2 (S28-4 for RDT)		-0.2467 V.	.2164
	Input bus voltage	S26-1, S27-1 (S27-3 for RDT)		34.99 V.	35.06
	Input bus current	S26-1, S27-2 (S27-4 for RDT)		10.545 mA.	10.76
5.10.11.1	Band 1+ output voltage	S26-1, S27-5		23.98	24.56
5.10.11.2	Band 1- output voltage	S27-6		-24.17	-23.96
5.10.11.3	2+	S27-7		24.28	23.67
5.10.11.4	2-	S27-8		-24.28	-24.18
5.10.11.5	3+	S27-9		26.21	24.29
5.10.11.6	3-	S27-10		-23.27	-23.86
5.10.11.7	Band 4+ output voltage	S26-1, S27-11		24.61	24.46

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	SWM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT	
5.10.11.8	Band 4- output voltage	S26-1, S27-12		-24.13	- 24.09	
5.10.11.9	5,7+	S26-2, S27-1		23.31	23.83	
5.10.11.10	5,7-	S27-2		-23.27	- 23.60	
5.10.11.11	6+	S27-3		23.84	23.47	
5.10.11.12	Band 6-	S27-4		- 23.50	- 23.78	
5.10.11.13	SMA Htr +	S27-5		24.72	25.56	
5.10.11.14	Htr -	S27-6		- 25.05	- 25.44	
5.10.11.15	+7V	S27-7		9.807	N/A	SCN-2
5.10.11	+7V	(S27-8 For RDT)		N/A	9.759	SCN-2
5.10.11	+29V	S27-9		31.73	N/A	SCN-2
5.10.11	+29V	(S27-11 For RDT)		N/A	31.97	SCN-2
5.10.11	-29V	S27-10		-32.05	A	SCN-2
	SMA -29V	S26-2, (S27-12 for RDT)		N/A	- 31.80	SCN-2
5.10.11.18	Radiometer	S26-3, S27-2		9.58	9.953	
5.10.11.19	CDVU	S27-3		9.70	9.638	
5.10.11.20	Analog +	S27-4		26.88	27.23	
5.10.11.21	Analog -	S27-5		-24.42	-25.33	
5.10.11.22	Electromech.	S27-6		45.25	47.76	
5.10.11.23	Outgas	S27-7		103.69	102.10	
5.10.11.24	Parasitic	S27-9		31.00	N/A	SCN-2
	Parasitic output voltage	S26-3, (S27-10 for RDT)		N/A	31.75	SCN-2
5.10.11.25	Band 1+ TM output	S26-4, S28-5		4.372	4.490	
5.10.11.26	1-	S28-6		4.398	4.361	
5.10.11.27	2+	S28-7		4.416	4.307	
5.10.11.28	2-	S28-8		4.396	4.384	
5.10.11.29	3+	S28-9		4.770	4.423	
5.10.11.30	3-	S28-10		4.240	4.350	
5.10.11.31	4+	S28-11		4.466	4.443	
5.10.11.32	4-	S26-4, S28-12		4.396	4.381	
5.10.11.33	Band 5,7+ TM output	S26-5, S28-1		4.253	4.363	

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.11.34	Band 5,7- TM output	S26-5, S28-2		4.242	4.302
5.10.11.35	6+	S28-3		4.131	4.250
5.10.11.36	Band 6-	S28-4		4.290	4.342
5.10.11.37	SMA Htr +	S28-5		4.512	4.657
5.10.11.38	Htr -	S28-6		4.525	4.601
5.10.11.39	+7V	S28-7 (S28-8 for RDT)		6.043	6.019
5.10.11.40	+29V	S28-9 (S28-11 for RDT)		4.329	4.385
5.10.11.41	SMA -29V	S26-5, S28-10 (S28-12 for RDT)		3.671	3.723
5.10.11.42	Radiometer	S26-6, S28-2		5.199	5.340
5.10.11.43	CDVU	S28-3		5.378	5.383
5.10.11.44	Analog +	S28-4		4.779	5.339
5.10.11.45	Analog -	S28-5		4.470	4.939
5.10.11.46	Electromech.	S28-6		5.544	~~4.480~~ 4.980
5.10.11.47	Outgas - TM output	S26-6, S28-7		5.165	~~5.152~~ 5.152
5.10.12.1	Bus voltage	S26-1, S27-1 (S27-3 for RDT)		35.01	35.08
5.10.12.2	Input bus current	S26-1, S27-2 (S27-4 for RDT)		35.37	36.08
5.10.12.3	SMA Htr + output voltage	S26-2, S27-5		21.39	21.93
5.10.12.4	Htr + ripple	Seen on Scope	<630 mV pk-pk	40	40
5.10.12.5	Htr - voltage	S26-2, S27-6		-22.09	-22.63
5.10.12.6	SMA Htr - ripple	Seen on Scope	<630 mV pk-pk	40	40
5.10.12.7	CDVU voltage	S26-3, S27-3		7.509	7.692
5.10.12.8	CDVU ripple	Seen on Scope	<240 mV pk-pk	50	60
5.10.12.9	Outgas - output voltage	S26-3, S27-7		96.69	97.57
5.10.12.10	Outgas - output ripple	Seen on Scope	2.50V pk-pk	300mV	350mV
5.10.12.11	Parasitic output voltage	S26-3, S27-9 (S27-10 for RDT)		30.01	30.60
5.10.12.12	Parasitic output ripple	Seen on Scope	<900 mV pk-pk	100	100

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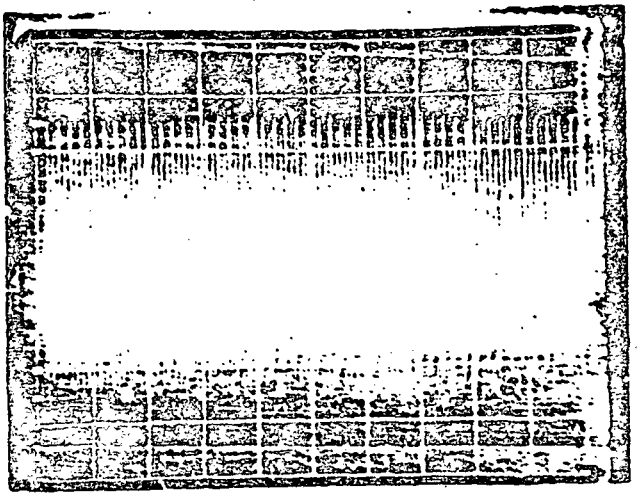
10.4 Performance test (continued)

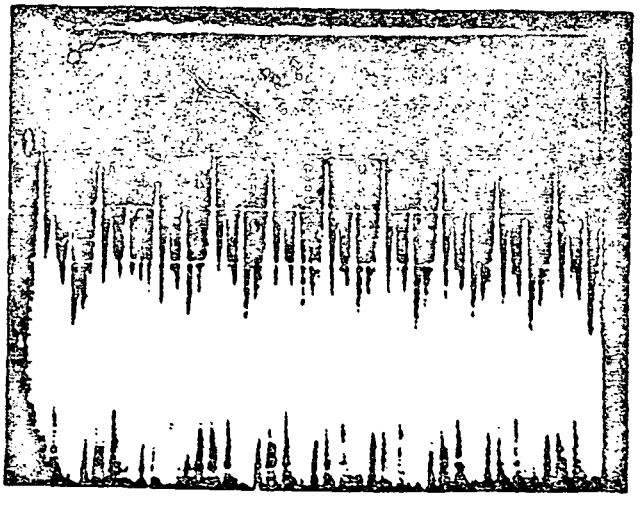
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.13.1	Input current telemetry	S26-4, S28-2 (S28-4 for RDT)		1096	19428
5.10.13.2	SMA Htr + output	S26-5, S28-5		3,909	4.011
5.10.13.3	SMA Htr -	S26-5, S28-6		4.004	4.110
5.10.13.4	CDVU	S26-6, S28-3		4218	4.317
5.10.13.5	Outgas output telemetry	S26-6, S28-7		4.325	4.396
5.10.14.1	Photograph of reflected input current ripple in outgas mode – PRIMARY SIDE				



(2mA) CURRENT/DIV: 2 mA.C.

(10uS) SWEEP RATE: 50 usec

5.10.14.2 Photograph of reflected input current ripple in outgas mode – REDUNDANT SIDE



(2mA) CURRENT/DIV: 2 mA.C.

(10uS) SWEEP RATE: 10 usec

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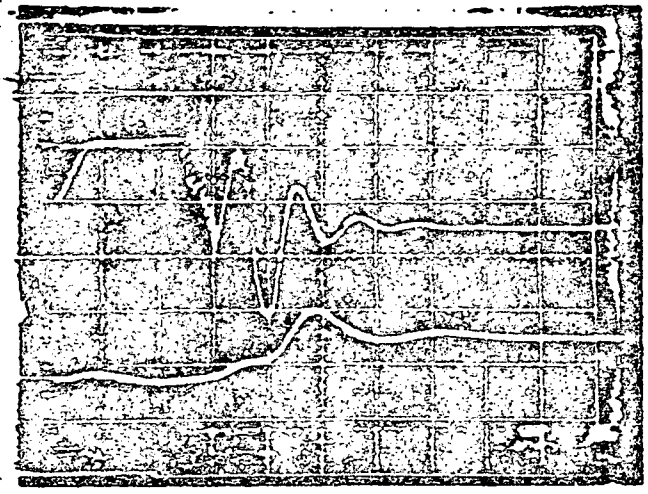
10.4 Performance test (continued)

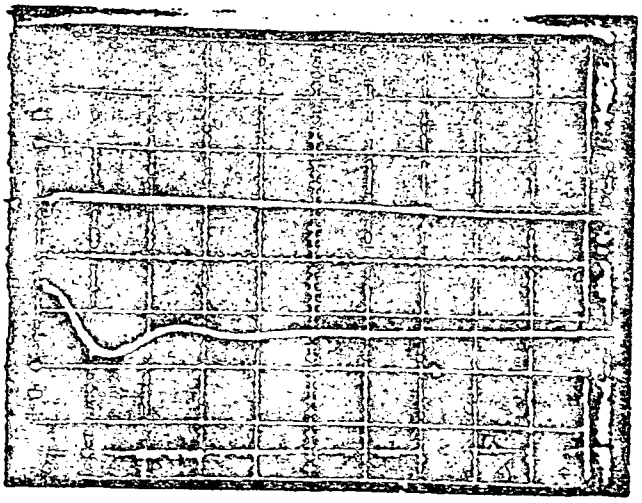
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.1.1	Input current with CDVU off.	S26-1, S27-2 (S27-4 for RDT)		33.61	34.23

5.10.15.1.2 Photograph of input bus current and CDVT output voltage as CDVU load is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 1V
(200mA) CURRENT/DIV: 200mA
(1mS) SWEEP RATE: 1mS

5.10.15.1.3 Photograph of input bus current and CDVT output voltage as CDVU load is disabled - PRIMARY SIDE

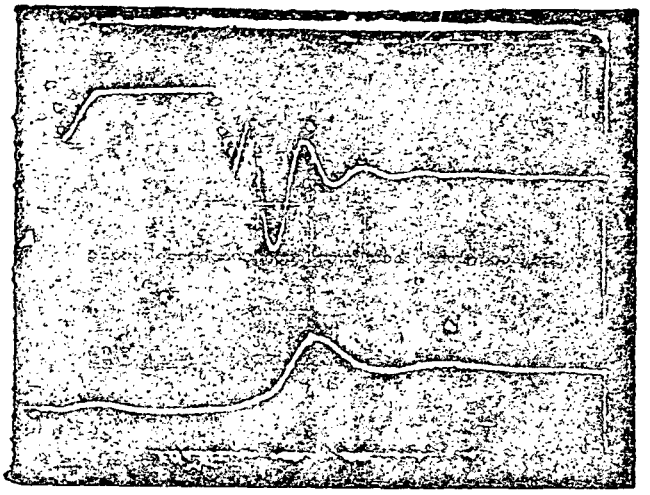


(2V) VOLTAGE/DIV: 1V
(200mA) CURRENT/DIV: 200mA
(2mS) SWEEP RATE: 1mS

10.4 Performance test (continued)

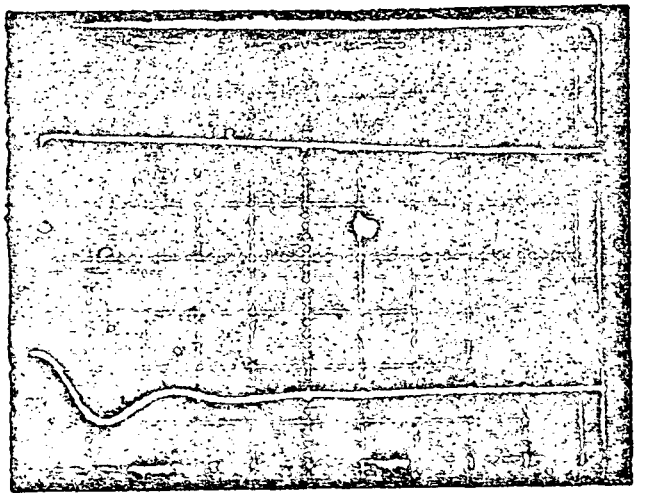
REF. PARA.	DESCRIPTION

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is enabled – REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(200mA) CURRENT/DIV: 200mA
(1mS) SWEEP RATE: 1mS

5.10.15.1.2 Photograph of input bus current and CDVU output voltage as CDVU load is disabled – REDUNDANT SIDE



(2V) VOLTAGE/DIV: 1V
(200mA) CURRENT/DIV: 200mA
(2mS) SWEEP RATE: 1mS

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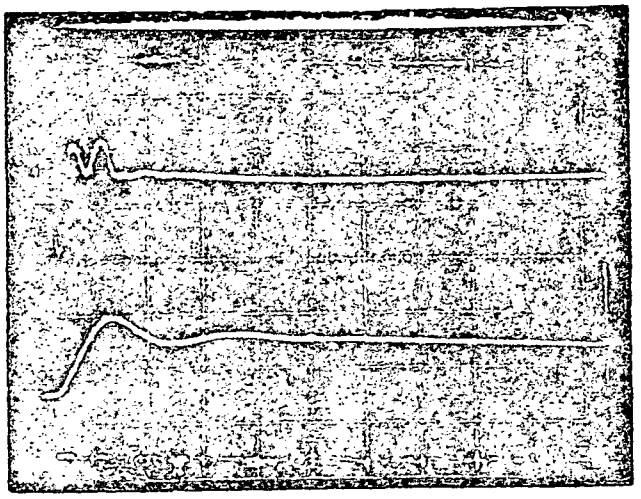
10.4 Performance test (continued)

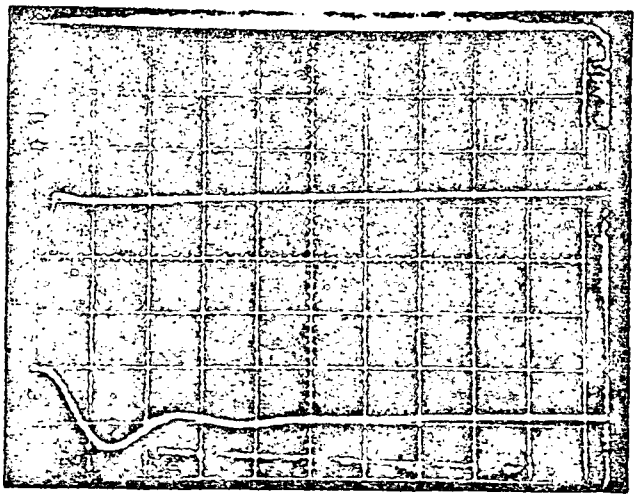
REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.15.2.1	Input bus current with outgas disabled	S26-1, S27-2 (S27-4 for RDT)		12.944	13.173

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1mS

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - PRIMARY SIDE

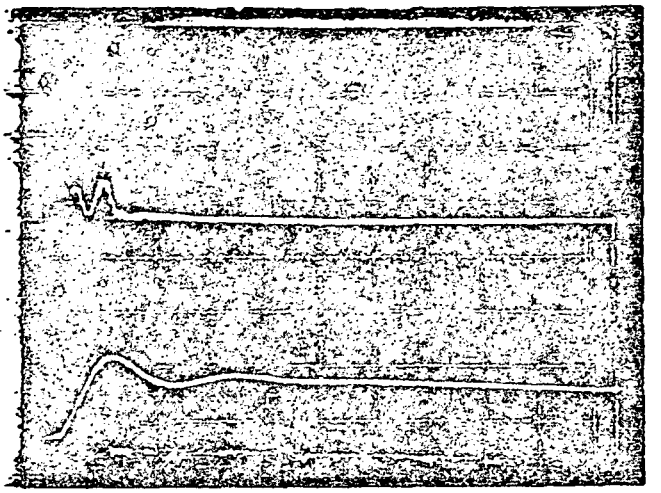


(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(2mS) SWEEP RATE: 1mS

10.4 Performance test (continued)

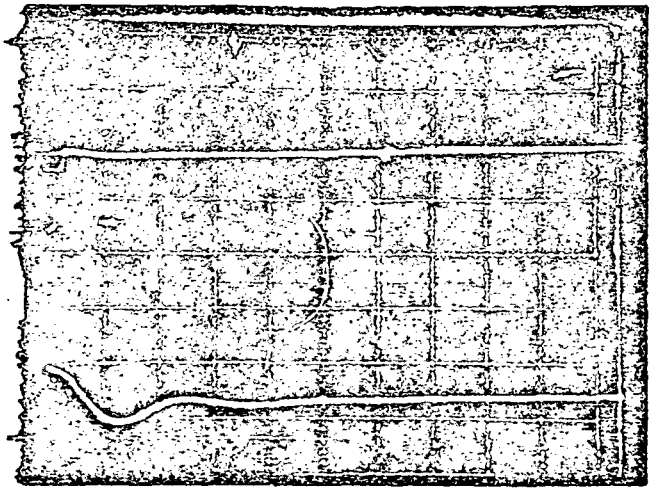
EP, PARA.	DESCRIPTION

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is enabled - REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(500uS) SWEEP RATE: 1mS

5.10.15.2.2 Photograph of input bus current and outgas voltage as outgas load is disabled - REDUNDANT SIDE



5V) VOLTAGE/DIV: 5V
2A) CURRENT/DIV: 2A
1mS) SWEEP RATE: 1mS

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10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITION	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.16.1	EPS voltage	S26-1, S27-1 (S27-3 for RDT)		35.09 (49)	35.0C
5.10.16.2	EPS current	S26-1, S27-2 (S27-4 for RDT)		15.19 (50)	15.684
5.10.16.3	SMA Htr +output voltage	S26-2, S27-5		21.77 (13)	22.15
5.10.16.4	SMA Htr +load current	S26-8, S34-1		46.43 (18)	47.76
5.10.16.5	SMA Htr -output voltage	S26-2, S27-6		-22.16 (14)	22.57
5.10.16.6	SMA Htr -load current	S26-8, S34-2		-8.750 (19)	8.910
5.10.16.7	CDVU output voltage	S26-3, S27-3		7.513 (20)	7.655
5.10.16.8	CDVU load current	S26-8, S34-10		.2684 (45)	.2748
5.10.16.9	Parasitic output voltage	S26-3, S27-9 (S27-10)		30.73 (21)	31.22
5.10.16.10	Parasitic load current	S26-8, S34-7		143.26 (46)	145.97
5.10.16.11	Input power (5.10.16.1 x 5.10.16.2)			53.165	54.912
5.10.16.12	Output power ((5.10.16.3 x 5.10.16.4) + (5.10.16.5 x 5.10.16.6) + (5.10.15.7 x 5.10.16.8) + (5.10.16.9 x 5.10.16.10)	(Primary) N/A		17.217	17.878
5.10.16.13	Efficiency ((5.10.16.12) ÷ (5.10.16.11)) x 100%	(Redundant) N/A		32.4%	32.6%

SMA HTR-= 2.047
SMA HTR-= 194
CDVU= 4.037
PARASITIC= 10.947
INPUT POWER= 53.165
OUTPUT POWER= 17.217
EFFICIENCY= 32.4 %

SMA HTR+= 2.119
SMA HTR-= 191
CDVU= 4.029
PARASITIC= 11.736
INPUT POWER= 54.912
OUTPUT POWER= 17.878
EFFICIENCY= 32.6 %

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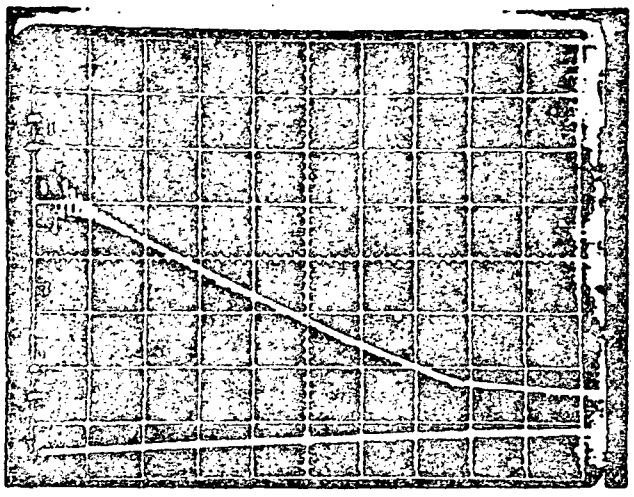
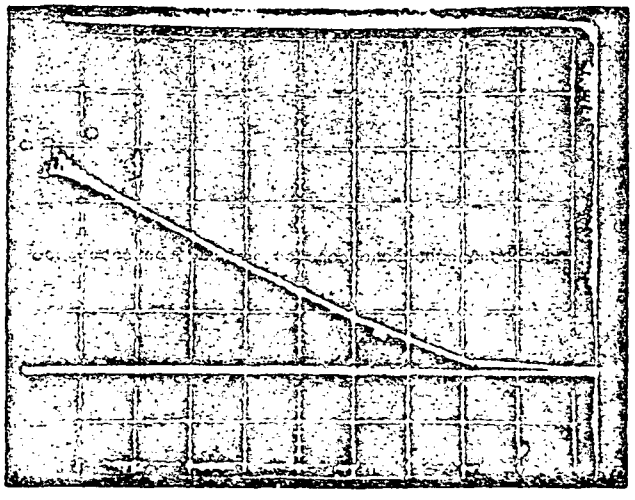
10.4 Performance test (continued)

5.10.17.1 Photograph of input bus current and input bus voltage as is disable - PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1MS

5.10.17.1 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE

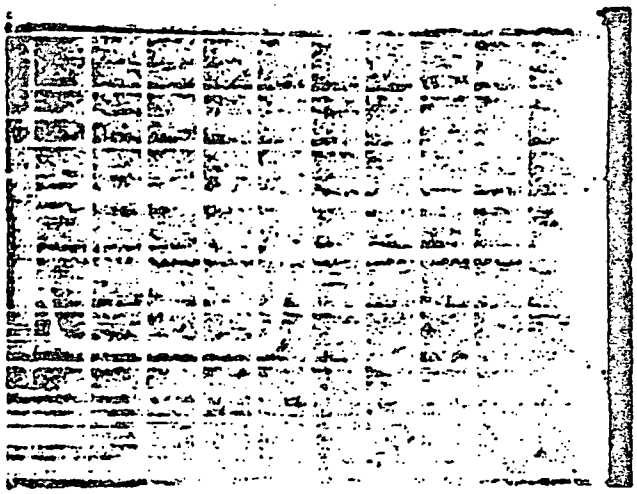


(5V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(1mS) SWEEP RATE: 1MS

10.4 Performance test (continued)

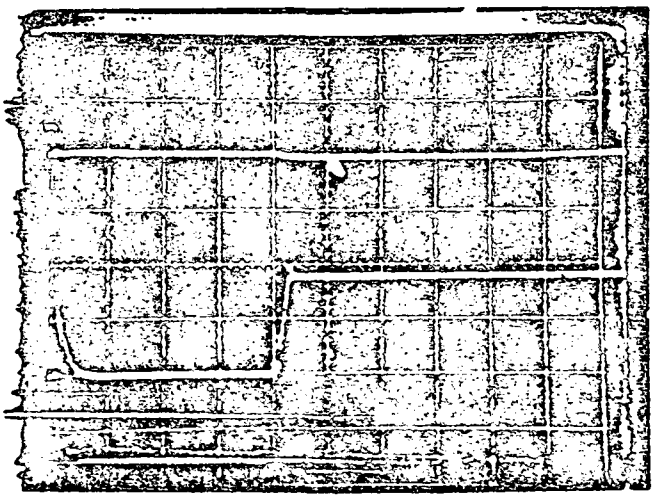
5.10.17.2 Unit stays off (check) ✓ Primary ✓ Redundant

5.10.17.3 Photograph of input bus current and input bus voltage as is enabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(100mS) SWEEP RATE: 100mS

5.10.17.3 Photograph of input bus current and input bus voltage as as is enabled - REDUNDANT SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(100mS) SWEEP RATE: 100mS

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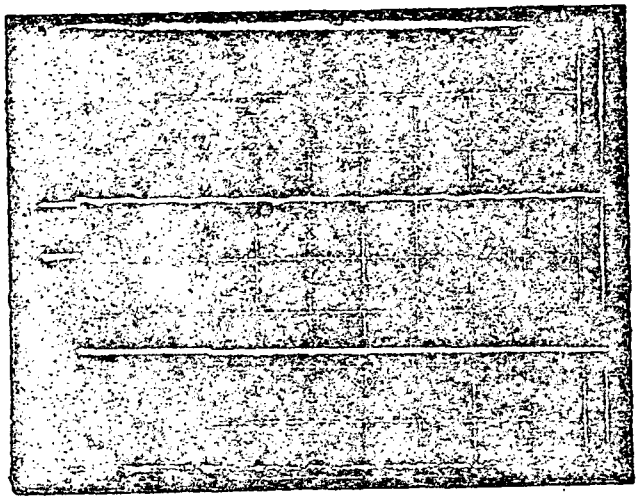
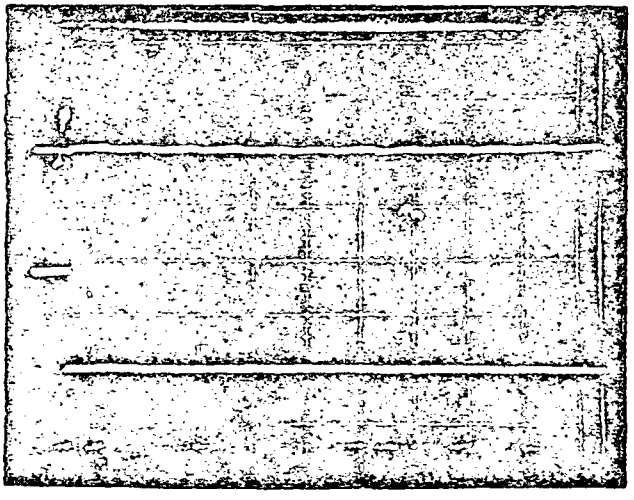
10.4 Performance test (continued)

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - PRIMARY SIDE



(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 10 mS

5.10.17.4 Photograph of input bus current and input bus voltage as is disabled - REDUNDANT SIDE

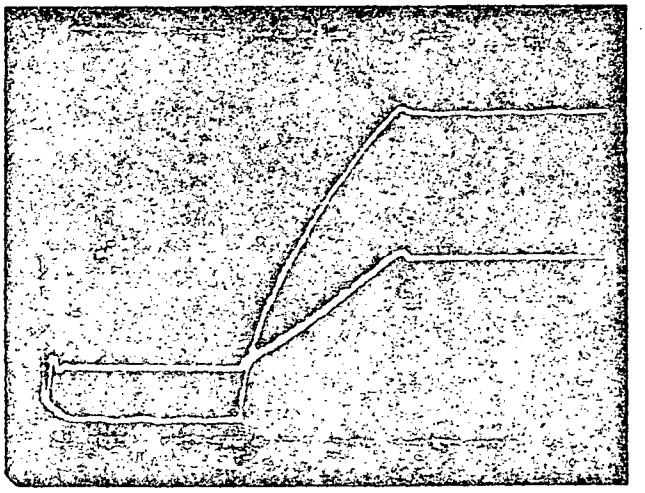


(2V) VOLTAGE/DIV: 5V
(2A) CURRENT/DIV: 2A
(10mS) SWEEP RATE: 10mS

10.4 Performance test (continued)

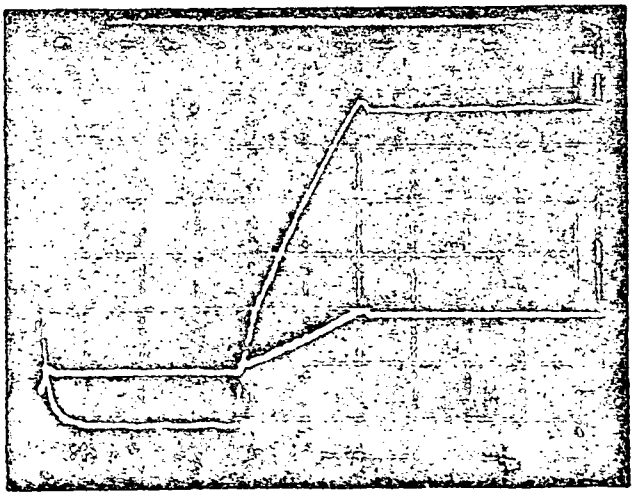
F. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.17.5	Record that UUT operates correctly.		(checkmark)	✓	✓

5.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 10mS

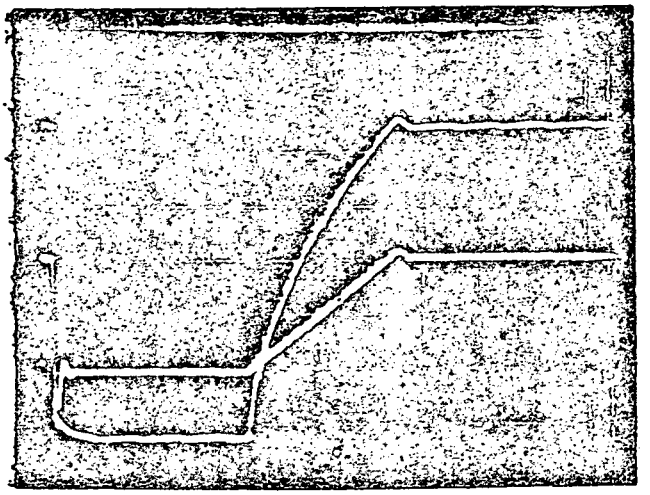
5.10.18.2 Photograph of input bus current and parasitic output voltage as parasitic enable command is issued (all loads are ON except outgas) — PRIMARY SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 10mS

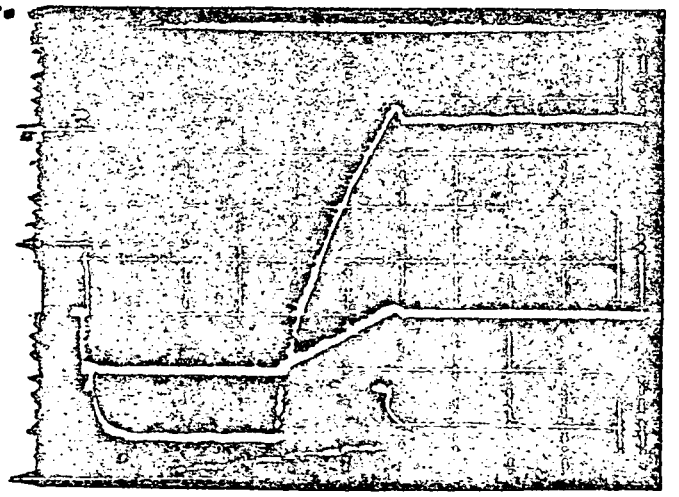
10.4 Performance test (continued)

.10.18.1 Photograph of input bus current and MUX output voltage as MUX enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5V) VOLTAGE/DIV: 5V
(5A) CURRENT/DIV: 5A
(20mS) SWEEP RATE: 10 mS

5.10.18.2 Photograph of input bus current and MUX output voltage as parasitic enable command is issued (all loads are ON except outgas) — REDUNDANT SIDE



(5v) Volts/Div: 5 V
(5A) Current/Div: 5A
(20mS) Sweep Rate: 10 mS

10.4 Performance test (continued)

REF. PARA.	DESCRIPTION	DVM SWITCH POSITIONS	LIMITS	MEASUREMENT PRIMARY	MEASUREMENT REDUNDANT
5.10.18.4	Undervoltage Trip Point (ON/OFF)	S26-1, S27-1 (S27-3 for RDT)	18.0 ±1.50V	15.09	18.08
5.10.18.5	UUT stays OFF			✓	✓
5.10.18.6	Undervoltage Trip Point (OFF/ON)	S26-1, S27-1 (S27-3 for RDT)	19.0 ±1.50V	15.95	18.88
5.10.18.7	Overvoltage Trip Point	S26-1, S27-1 (S27-3 for RDT)	38.0 ± 2V	39.37	39.93 SCN 2
5.10.18.8	UUT stays OFF			✓	✓
5.10.18.9	UUT turns ON			✓	✓

2-5-82
DATE

RK Colson
TESTER(S)

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10.1 Redundant lead test

PROTOFLIGHT DNA OR FLIGHT ✓ S/N 004 TEMPERATURE: Ambient
IN-PROCESS DNA QUAL DNA OR ACCEPTANCE: ✓
TESTING PHASE: FINAL

REF. PARA.	DESCRIPTION	LIMITS	MEASUREMENT
5.3.1	Open light of 3646388	ON	✓
	Continuity light of 3646388	OFF	✓
5.3.2	Open light of 3646388	OFF	✓
	Continuity light of 3646388	ON	✓
5.3.3	Open light of 3646388	ON	✓
	Continuity light of 3646388	OFF	✓
5.3.4	Open light of 3646388	OFF	✓
	Continuity light of 3646388	ON	✓

5 Feb 82
Date

R. Ellars
Tester(s)

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10.2 Ground isolation test

PROTOFLIGHT NA, OR FLIGHT ✓, S/N 004 TEMPERATURE AMB
IN-PROCESS NA, QUAL N/A, OR ACCEPTANCE ✓
TESTING PHASE: FINAL (D) ACCEPT. PRIOR TO DELIVERY.

REF. PARA.	DESCRIPTION	LIMITS	MEASUREMENT
5.4.1.2	J19-4 (D) to J18-4 (N)	< 1 Ω	0.011 Ω
5.4.1.3	to J3-B1	> 1 MΩ	3.0 MΩ
5.4.1.4	to J3-B2		3.0 MΩ
5.4.1.5	to J3-D2		3.00
5.4.1.6	to J3-F2		3.22
5.4.1.7	to J3-C3		3.02
5.4.1.8	to J4-R1		4.04
5.4.1.9	to J3-S5		∞
5.4.1.10	to J3-V5		∞
5.4.1.11	to J3-S1		3.02
5.4.1.12	to J4-P3		3.20
5.4.1.13	to J4-A2		3.80
5.4.1.14	to J4-C2		3.80
5.4.1.15	to J4-E2		4.02
5.4.1.16	to J4-G2		4.02
5.4.1.17	to J4-J2		4.20
5.4.1.18	J19-4 (D) to J4-M2		4.32
5.4.2.2	J3-V1 to J3-B1		4.42
5.4.2.3	to J3-B2		4.62
5.4.2.4	to J3-D2		4.80
5.4.2.5	to J3-F2		4.81
5.4.2.6	to J3-C3		4.58
5.4.2.7	to J4-R1		4.60
5.4.2.8	to J3-S5		∞
5.4.2.9	to J3-V5		∞
5.4.2.10	to J3-S1		4.20
5.4.2.11	to J4-P3		4.76
5.4.2.12	J3-V1 to J4-A2	> 1 MΩ	4.85 MΩ

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10.2 Ground isolation test (continued)

REF. PARA.	DESCRIPTION	LIMITS	MEASUREMENT
5.4.2.13	J3-V1 to J4-C2	> 1 MΩ	5.15 MΩ
5.4.2.14	to J4-E2		5.17
5.4.2.15	to J4-G2		5.17
5.4.2.16	to J4-J2		5.12
5.4.2.17	to J4-M2	> 1 MΩ	5.19 MΩ
5.4.2.18	J3-V1 to J2B-4 (N)	< 1 Ω	0.079 Ω
5.4.3.1.2	J3-B1 to J3-C3	> 1 KΩ	1.573 KΩ
5.4.3.1.3	to J4-R1	> 50 KΩ	87 KΩ
5.4.3.1.4	to J3-S5	> 1 MΩ	∞
5.4.3.1.5	to J3-V5	> 1 MΩ	∞
5.4.3.1.6	to J3-S1	> 750Ω	1.01 KΩ
5.4.3.1.7	to J4-P3	> 750Ω	1.01 KΩ
5.4.3.1.8	to J4-A2	> 50 KΩ	87 KΩ
5.4.3.1.9	to J4-C2		87 KΩ
5.4.3.1.10	to J4-E2		87
5.4.3.1.11	to J4-G2		87
5.4.3.1.12	to J4-J2		87
5.4.3.1.13	J3-B1 to J4-M2	> 50 KΩ	87 KΩ
5.4.3.2.1	J3-B2 to J3-C3	> 1 KΩ	1.51 KΩ
5.4.3.2.2	to J4-R1	> 50 KΩ	87 KΩ
5.4.3.2.3	to J3-S5	> 1 MΩ	∞
5.4.3.2.4	to J3-V5	> 1 MΩ	∞
5.4.3.2.5	to J3-S1	> 750Ω	1.01 KΩ
5.4.3.2.6	to J4-P3	> 750Ω	1.01 KΩ
5.4.3.2.7	to J4-A2	> 50 KΩ	87 KΩ
5.4.3.2.8	to J4-C2		87
5.4.3.2.9	to J4-E2		87
5.4.3.2.10	to J4-G2		87
5.4.3.2.11	to J4-J2		87
5.4.3.2.12	J3-B2 to J4-M2	> 50 KΩ	87 KΩ
5.4.3.3.1	J3-D2 to J3-C3	> 1 KΩ	1.52 KΩ

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10.2 Ground isolation test (continued)

REF. PARA.	DESCRIPTION	LIMITS	MEASUREMENT
5.4.3.3.2	J3-D2 to J4-R1	>50 kΩ	87KΩ
5.4.3.3.3	to J3-S5	> 1 MΩ	∞
5.4.3.3.4	to J3-V5	> 1 MΩ	∞
5.4.3.3.5	to J3-S1	> 750Ω	1.02KΩ
5.4.3.3.6	to J4-P3	> 750Ω	1.02KΩ
5.4.3.3.7	to J4-A2	> 50 kΩ	87KΩ
5.4.3.3.8	to J4-C2		87
5.3.3.3.9	to J4-E2		87
5.4.3.3.10	to J4-G2		87
5.4.3.3.11	to J4-J2		87
5.4.3.3.12	J3-D2 to J4-M2	> 50 kΩ	87KΩ
5.4.3.4.1	J3-F2 to J3-C3	> 1 kΩ	1.51KΩ
5.4.3.4.2	to J4-R1	> 50 kΩ	87KΩ
5.4.3.4.3	to J3-S5	> 1 MΩ	∞
5.4.3.4.4	to J3-V5	> 1 MΩ	∞
5.4.3.4.5	to J3-S1	> 750Ω	1.01KΩ
5.4.3.4.6	to J4-P3	> 750Ω	1.01KΩ
5.4.3.4.7	to J4-A2	> 50 kΩ	87KΩ
5.4.3.4.8	to J4-C2		87KΩ
5.4.3.4.9	to J4-E2		87KΩ
5.4.3.4.10	to J4-G2		87KΩ
5.4.3.4.11	to J4-J2		87KΩ
5.4.3.4.12	J3-F2 to J4-M2	> 50 kΩ	87KΩ
5.4.4.2	J3-C3 to J4-R1	> 50 kΩ	87KΩ
5.4.4.3	to J3-S5	> 1 MΩ	∞
5.4.4.4	to J3-V5	> 1 MΩ	∞
5.4.4.5	to J3-S1	> 450 Ω	499Ω
5.4.4.6	to J4-P3	> 450 Ω	499Ω
5.4.4.7	to J4-A2	> 50 kΩ	87KΩ
5.4.4.8	to J4-C2	> 50 kΩ	87KΩ
5.4.4.9	J3-C3 to J4-E2	> 50 kΩ	87KΩ

10.2 Ground isolation test (continued)

REF. PARA.	DESCRIPTION	LIMITS	MEASUREMENT
5.4.4.10	J3-C3 to J4-G2	> 50 kΩ	87K Ω
5.4.4.11	↓ to J4-J2	↓	87K Ω
5.4.4.12	J3-C3 to J4-M2	> 50 kΩ	87K Ω
5.4.5.2	J4-R1 to J3-S5	> 1 MΩ	∞
5.4.5.3	| to J3-V5	> 1 MΩ	∞
5.4.5.4	| to J3-S1	>50 KΩ	87K Ω
5.4.5.5	| to J4-P3	>50 KΩ	87K Ω
5.4.5.6	| to J4-A2	>150 KΩ	200K Ω
5.4.5.7	| to J4-C2	|	200 |
5.4.5.8	| to J4-E2	|	200 |
5.4.5.9	| to J4-G2	↓	200 ↓
5.4.5.10	↓ to J4-J2	>150 KΩ	200 KΩ
5.4.5.11	J4-R1 to J4-M2	> 50 kΩ	200 KΩ
5.4.6.1.2	J3-S5 to J3-S1	> 5 MΩ	∞
5.4.6.1.3	| to J4-P3	|	∞ |
5.4.6.1.4	| to J4-A2	|	∞ |
5.4.6.1.5	| to J4-C2	|	∞ |
5.4.6.1.6	| to J4-E2	|	∞ |
5.4.6.1.7	| to J4-G2	|	∞ |
5.4.6.1.8	↓ to J4-J2	↓	∞ ↓
5.4.6.1.9	J3-S5 to J4-M2	> 5 MΩ	∞
5.4.6.2.2	J3-V5 to J3-S1	> 5 MΩ	∞
5.4.6.2.3	| to J4-P3	|	∞ |
5.4.6.2.4	| to J4-A2	|	∞ |
5.4.6.2.5	| to J4-C2	|	∞ |
5.4.6.2.6	| to J4-E2	|	∞ |
5.4.6.2.7	| to J4-G2	|	∞ |
5.4.6.2.8	| to J4-J2	↓	∞ ↓
5.4.6.2.9	J3-V5 to J4-M2	> 5 MΩ	∞
5.4.7.1.2	J3-S1 to J4-A2	> 50 kΩ	87K Ω
5.4.7.1.3	↓ to J4-C2	↓	86K Ω
5.4.7.1.4	J3-S1 to J4-E2	> 50 kΩ	86K Ω

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10.2 Ground isolation test (continued)

REF. PARA.	DESCRIPTION	LIMITS	MEASUREMENT
5.4.7.1.5	J3-S1 to J4-G2	> 50 kΩ	87 kΩ
5.4.7.1.6	↓ to J4-J2	↓	86 kΩ
5.4.7.1.7	J3-S1 to J4-M2	> 50 kΩ	86 kΩ
5.4.8.1.2	J4-A2 to J4-C2	> 150 kΩ	200 kΩ
5.4.8.1.3	| to J4-E2	|	200
5.4.8.1.4	| to J4-G2	|	200
5.4.8.1.5	↓ to J4-J2	↓	200 kΩ
5.4.8.1.6	J4-A2 to J4-M2	> 150 kΩ	200 kΩ
5.4.8.2.2	J4-C2 to J4-E2	> 150 kΩ	200
5.4.8.2.3	| to J4-G2	|	200
5.4.8.2.4	↓ to J4-J2	↓	200
5.4.8.2.5	J4-C2 to J4-M2	|	200
5.4.8.3.2	J4-E2 to J4-G2	|	200
5.4.8.3.3	↓ to J4-J2	|	200
5.4.8.3.4	J4-E2 to J4-M2	|	200
5.4.8.4.2	J4-G2 to J4-J2	|	200
5.4.8.4.3	J4-G2 to J4-M2	↓	200
5.4.8.5.1	J4-J2 to J4-M2	> 150 kΩ	200 kΩ

2/5/82
DATE

EVANS BOWSER
TESTER(S)

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10.3 Hi-pot test

PROTOFLIGHT DNA, OR FLIGHT ✓, S/N 004 TEMPERATURE: Ambient
IN-PROCESS DNA, QUAL DNA OR ACCEPTANCE ✓
TESTING PHASE: FINAL, 100V DNA OR 30V ✓.

REF. PARA.	DESCRIPTION	LIMITS	MEASUREMENT
5.5.1	UUT to J18 & J1;		
5.5.2	a) UUT to J46A	> 1 mΩ	13 meg Ω
	b) UUT TOJ46B	> 1 mΩ	4.5 meg Ω
	c) UUT tJ47A	> 1 mΩ	10.5 meg Ω
	d) UUT tJ47B	> 1 mΩ	10.5 meg Ω
		> 1 mΩ	4.2 meg Ω

5 Feb 82
Date

R Ellis
Tester(s)

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